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THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

VOL. CXIV.—No. 3919. MARCH 15, 1918.

THE ARCHITECT'S FUTURE STATUS.

THE decay of institutions which have outlasted their time is usually marked by an excessive regard for minor points which have little bearing on the general activities of mankind. Up to the very eve of the French Revolution, the upper classes were chiefly concerned with questions of etiquette, and were aloof from the great popular movement which brought about the final downfall of a social order and a monarchy. Louis XV. said "*après moi le deluge*," and was justified in believing that his personal interests were safe during his time, and showed his cynical indifference to what might affect his successor; but architects have no similar assurance that they can end their days with success under an old regime, and have every reason to be putting their house in order, which will not, we believe, be furthered by conferences of the nature of those recently held.

We believe there is more useful matter in the letter we recently published from Mr. John Murray than in the whole of the discussion which has taken place at the R.I.B.A. since the war, and that, if architects are to have a future, the programme which he lays down will have to form a basis for action. It has been said that we have agreed that controversial matters should not be raised during the war; but the points which Mr. Murray raises are not controversial, and wise action based on his recommendations would be endorsed by those architects who are at present serving with the forces. To the points which Mr. Murray has raised we have added another suggestion which is in perfect accordance with the tenor of his recommendations: that we should consider whether the position of the architect is not completely analogous to that of the engineer who works in the capacity of a consultant and also that of a contractor, and whose professional position is not damaged by this fact. The engineer has the reputation of being a practical man, but we doubt whether, if he had confined himself to drawing up schemes to be executed by others, he would have the standing which is his to-day. The fact that men of professional capacity and training find work in contracting firms, not only raises the standard of the work of those firms, but increases the public appreciation of engineering as a profession, and so adds to the status of the consulting engineer or designer; it also serves to bring the consulting engineer more into touch with the actual practical problems of his work.

We also believe that the closest enquiry into the relative positions of the engineer and architect will establish the fact that they are practically identical. Both have to deal with large capital sums of money in their client's interest; both have to do with constructive science; and the work of each is a practical necessity to the world. The chief difference is that the engineer is more exclusively concerned with one building material than the architect, and that the latter has an additional science to deal with, the economical distribution of space so as to secure light, economy, and means of access. And in addition to the combination we have suggested there is that of the architect and the civil engineer, if we want to cover the whole field which was tilled by the architects and builders of past ages. Because great steel structures are so complicated that they require the highest expert knowledge, is there any reason why aesthetic considerations should be entirely eliminated, as they often have been because architects have narrowed the field of their studies? This makes it more essential to welcome to the Institute all those who can pass its tests, whether such men choose to practise as architects, engineers or contractors, as is urged by Mr. Murray in his letter. What we want is not that architects should only work in a certain capacity, but that their skill should be utilized in as many ways as possible for the benefit of the community and their own good. The only limitation is that if a professional man is paid for advice he must have no personal interest in the matter; if he builds to sell, or designs a wall paper, he is as much entitled to commercial profits as the less qualified man who does the same thing.

If it be urged that the Charter of the R.I.B.A. precludes the Institute from admitting members who wish to exercise their knowledge in any but one channel, there is reason either to obtain a new Charter giving greater liberty, or, alternatively, to found a new body whose constitution will be more elastic and comprehensive. The number of different engineering societies is not an indication of division of opinion on professional points, but a recognition of the immensely wide field which the profession embraces; and we urge that the same applies to the architectural profession in a somewhat smaller degree, and that we are somewhat hidebound through routine and have allowed the opportunities of architectural practice to be diminished in consequence, with the result that we are surrounded by a multitude of quasi-professional and trade callings which should, in reality, be exercised by the architect. The remedy is to admit all to the membership of the Institute who can prove their qualifications, and to inculcate on young architects the variety of methods in which they can seek occupation without severance from the general body. And, as Mr. Murray urges, it would be very advantageous for the R.I.B.A. to take premises large enough to give accommodation to kindred bodies under the same roof, to encourage the greater union of all the interests connected with structural design.

If this were done and a friendly community of interest promoted, based on co-operation, we should be able to utilize to the full the services of all those who had made a special study of a subject while at the same time we should be keeping in view the essential fact that everything which has to do with the finance, structure or decoration of a building is part of a single whole. We should try also to recognize competency and skill wherever and by whomsoever shown as long as they tended to the improvement and better understanding of the great craft of building.

We must face one definite fact, however much we may regret it—the great majority of buildings are erected for purposes of speculation, and the architect with no knowledge of or interest in building finance will generally find his services dispensed with in favour of someone else who has that knowledge. This need not mean the elimination of art, but it does involve a clear recognition that architectural practice includes many things besides which are absolutely essential to success and must be mastered, unless we are prepared to see the architect's role contracted to the filling in of spaces left by other professions. We should, in a word, work to secure a freehold interest in all constructive work, and not allow ourselves to be made weekly tenants who can be ejected at will by those belonging to better organized and qualified callings. Whether the length of the war will or will not give us time to frame a fresh scheme for the future, the task should be undertaken; and those returning from National Service in every capacity have a right to expect that those who remain behind should do something to meet the new problems which all must face at the conclusion of the war; and could we do better than by showing new ways in which the architect's capacities may be used, and in laying down a wider programme of education in order to fit the profession for its enlarged opportunities?

NOTES.

The Soane Museum.

WE have received a series of admirable and interesting picture cards of the Soane Museum, which we do not think is used as much as it should be by architectural students, for whom it should have a double attraction—that of association with one of the foremost architects of the nineteenth century and also because it is a storehouse of the results of architectural research. A high standard of delicacy and refinement marked Soane's work, which, though it belonged to an age when tradition was dead, affords an example of what scholarship and culture can achieve under disadvantageous circumstances. The rooms of the Soane Museum are filled with interesting curios and specimens; and the library is full of valuable books, which are readily accessible and can be conveniently studied in the rooms once inhabited by Soane. Under the directorship of Mr. Bolton, we trust the Museum will be better utilised by the profession, and would suggest that the trustees of the Soane Museum might ask the R.I.B.A. to hold one of its conversaziones there, which would afford an opportunity of making the museum better known.

Enthusiasm

ENTHUSIASM is a most useful force and has seldom been more evident than in a leading article in our contemporary, *The Field*, of February 18, on "Town Planning and Reconstruction." The writer says that the conferences at the Royal Institute of British Architects have proved as interesting as they are valuable, and goes on to express the hope that much good will arise from the housing competitions instituted. After a delightfully written historical sketch, we are told that we shall see the morning of a different age, a world in which the wealthy patron will be rarer than he ever was, and in which riches (in private hands) will be unfashionable. There will be no ignorant classes at the bottom struggling for a bare livelihood and knowing or caring for little else. There will be no plutocratic monopolists at the top, grasping their privilege and shirking their responsibilities. We are told in conclusion that the National Housing and Town Planning Council are with other bodies the heirs of the greatest guilds and confraternities which the energies of the past ever brought into being. With the greatest respect for the writer of a delightfully expressed article, we submit that there is a fair modicum of absolute nonsense in such utterances. Labour congresses show us that a great section of the people are appallingly ignorant and that they are disposed to forget that we are enjoined to render unto Cæsar that which is Cæsar's. Many seem to have forgotten the fundamental distinction between *meum* and *tuum* and still more are apparently forgetful that the wealth which may in the future be created by effort is overwhelming in comparison with anything that can be wrenched with injustice from the "capitalist and employer." Self-knowledge, self-restraint, and effort may make men and communities god-like in power, but we have no reason to condemn those who, in the past, have secured advantages for themselves and their successors by labour and thought. Order, method, and, above all, justice, are what is wanted for the prosperity of communities in the future, now as before.

The Design and Industries Association.

THE journal of the Design and Industries Association contains a most interesting account of a discussion held between members of the Association and representatives of firms from the Potteries, who, in the main, held that the pottery exhibited at the recent exhibition of the Arts and Crafts at Burlington House was a travesty on British pottery and did not represent its best work. The discussion made the line of cleavage very evident, for, while the Design and Industries Association chiefly concerned themselves with design and selected examples which were not replicas of historical styles, the potters concentrated their criticism on the results of processes and on the finish and skill shown in them. This is what we should expect, and as there is usually a fair mean between two opposed views, it is probable that some of the firms represented will modify their methods of design and impart new spirit into their productions, which is what is really needed. Those immersed in the details of any branch of work undoubtedly tend to attach too much value to process, and knowing what difficulties exist, are ready to be pleased when those difficulties have been overcome, forgetting that perfectly simple and easily produced work may often satisfy those who are indifferent to the exhibition of dexterity in manipulation and finish. The meeting should, we believe, be productive of much good.

The Welsh Housing & Development Year Book, 1918

THE "Welsh Housing and Development Year Book" contains much interesting matter, including articles on "The Regional Planning of Wales," "Town Planning and the Development of Hillside Areas"—a subject the importance of which will be realised by all visitors to the Principality, who will realise how the most beautiful sites have been spoilt and their advantages nullified by ignorance—"Suggested By-Laws with Respect to New Streets," "The Need for Education in Architecture and Town Planning," "A Ministry of Health," and other subjects. As is too often the case in countries whose natural beauty is great, the works of man are usually of the worst, and though many of our manufacturing districts in the North and Midlands leave much to be desired, the lands within the Celtic fringe supply us with the best specimens of what all should avoid in building. The average Welsh chapel is an outrage to the site on which it is placed, while the business streets and residential districts round a Welsh town usually form a museum of crude horrors both in form and colour. We welcome any movement which will tend to curb further attempts to injure nature, but fear that the almost entire obliteration of what exists in Wales is necessary if its urban centres are to be made pleasant places for those to whom beauty has an appeal.

Liability for Falling Trees.

As the season has arrived when heavy gales are to be expected, it may be well to draw attention to the decision of the Court of Appeal in the case Bruce *v.* Caulfield (*The Times*, January 25). The facts of the case and the decision in the Court below will be found noted in our issue for May 18 last, and it is satisfactory to find that the Court of Appeal has taken the view we ventured to express in our note, and has reversed the judgment of the Divisional Court. The action was brought by the owner of a house, whose property adjoined premises in the occupation of the defendant, for damage to his stables caused by a tree falling upon them during a gale of exceptional strength. Another tree of the same kind had fallen some fifteen months before and the County Court Judge had found that there was negligence in the defendant, as the tree was dangerous and the falling of the other tree should have made the defendant aware of this fact. The Divisional Court being divided in opinion, this judgment stood. The Court of Appeal, in reversing this judgment, held that if the tree had been blown down by the ordinary force of the wind, it might have been said this would afford some evidence of unsoundness, but this was admitted to be an exceptional gale; then as to the other tree, that tree was uprooted, whereas this was broken off, so here again there was no evidence of unsoundness in the tree complained of. The fact that other trees had been lopped after the accident was also relied upon as evidence, but the Court pointed out that the defendant was at the end of her lease (as a matter of fact, she was holding over with licence) and therefore this might have been done by her successor. Those who read these judgments will see that adjoining owners and occupiers, if they desire to escape litigation, should exercise care as to trees on boundaries and should examine them from time to time. Too often no steps are taken to ascertain their condition, and, as this case shows, to allow the wind to prove it may sometimes offer an instance of locking the stable-door, not after the steed is stolen, but after the stable has been knocked down.

THE CONCRETE INSTITUTE.

THE seventy-eighth ordinary general meeting of this Institute was held at Denison House, on the 28th ult., when a paper was read by Mr. Charles F. Marsh, M.Inst.C.E., &c., on "Criticisms of the London County Council Regulations relating to Reinforced Concrete."

The following regulations were specially criticised by the author:—

Nos. 2, 18, 19, 28, 31, 35, 38, 42, 43, 48 (*b*), 54, 61, 62, 64, 65, 66, 67 (*a*), 69, 72, 78, 82 (*a*) and (*c*), 83, 87, 88, 97, 99, 103, 105, 107, 109, 113, 116, 117, 119, 121, 122, 159, 162, 180 and 182.

Among the more important matters dealt with were:—

An increase in the percentage rate of reductions for loadings on columns, &c., in buildings having more than two stories, is advocated, and a clearer statement of the meaning of Regulations par. 19 is suggested. The working compressive stresses allowed for the stronger mixtures of concrete were considered too low, the equations laid down under paragraph 42 (*b*) were criticised and the employment of others advocated, reasons being given for their acceptance. Comparisons were made with the strengths of concretes under French and American regulations and recommendations, and with tests on concrete specimens. A constant value for the coefficient "*m*" was advocated and reasons given why such an assumption was reasonable, special consideration being given to hooped columns.

The regulations with respect to the distance apart of anchors to compression bars in beams and the bindings in ordinary columns where the hooping is not effective were held to be too stringent and a greater permissible spacing advocated, reasons being given showing why a wider spacing should be permitted. The allowance of a less minimum thickness than five inches for slabs and a wider spacing for distribution rods were advocated. The regulations with respect to the width of the flanges of T-beams were criticised and amendments suggested. The restrictive nature of the regulations with respect to compression members was severely criticised and tables given showing their effect on the design of columns and struts.

We take the following extracts from the paper. The author referred to the various paragraphs by their numbers, without quoting them at length.

The regulations relating to the use of reinforced concrete in building construction, recently issued by the London County Council, are the first of any importance in this country, and will doubtless be used as a basis for similar regulations throughout the Provinces.

Regulations governing the use of reinforced concrete or any other material should be framed in such a manner as will give the greatest scope to the development of the material with all necessary safeguards, but without placing undue restrictions upon its use, such as must tend to prevent its employment in suitable cases.

Paragraph 2 was, it is believed, inserted to permit the construction of reinforced concrete floors, such as were permitted before the passing of the London County Council (General Powers) Act, 1909, without being subject to the special regulations. The paragraph as drafted does not, in the author's opinion, make this clear.

Paragraph 18 does not state the plane to which the angle of dispersion may be extended. It is believed that it was the intention that this plane should be the axis of the main tensile reinforcing bars.

Paragraph 19 does not, in the author's opinion, give sufficient relief, and it is contended that the rate of reduction should be 10 per cent., not 5 per cent. The Joint Committee on Reinforced Concrete, instituted by the Royal Institute of British Architects, in their second report recommended a reduction of 10 per cent., after careful consideration, and it is possible that the main reason for the limit of five per cent. in the L.C.C. regulations is the fact that this limit is incorporated in the regulations for steel frame construction. If this is the case, it is contended that uniformity is an insufficient reason for limiting the relief in the case of the reinforced concrete regulations, if 10 per cent. is a safe allowance.

The limitation of the reduction to 50 per cent. is believed to be reasonable.

The meaning of the paragraph would be made clearer if it was stated as follows:—

"For the purpose of calculating the total load to be carried on foundations, pillars, and walls in buildings of more than two stories in height the following allowances may be made:—

"For the loading on the supports to the roof and top floor allow the full load.

"For the loading on the supports to the second floor below the roof allow in addition to the above the full dead load of that floor plus 90 per cent. of its superimposed loading.

"For the loading on the supports to the third floor below the roof allow in addition to above the full dead load of that floor plus 80 per cent. of its superimposed loading.

"And so on, the superimposed loading on each lower floor being reduced by increments of 10 per cent. till the reduction amounts to 50 per cent.

"For all lower floors the reduction of their superimposed loading shall be a constant amount of 50 per cent."

Paragraph 28 limits the length of a cantilever to five times the effective depth at the bearing but it is not clear why the length should not be allowed to vary with the actual maximum tensile or compressive stresses, as is permitted in the case of a beam, under paragraph 27.

Paragraphs 31, 35, and 38, when read together, will allow, in the case of a continuous beam over a wide support, an effective span equal to the clear span plus the effective depth of the beam or slab, provided the sectional area of steel, required at the end of the effective span, is carried across the centre of the support.

It is suggested that the regulations would be improved if a special paragraph were devoted to this case, which is by no means an unusual one.

It is also suggested that the definition of the effective span in paragraph 35 does not agree with that in paragraph 31.

Paragraphs 42 (*a*) and (*b*), 159 and 162 will be considered together as they refer to the strengths of the various concrete mixtures.

The proportions of the ingredients of the several mixtures given in the tables to paragraphs 42 (*a*) and 159 are unusual, and there does not appear to be any adequate reason for their use in preference to the usual method of description. If there is any useful purpose in the new basis of proportionment, it would still be desirable that the ordinary description for the various mixtures should also be given, *i.e.*, in the table to paragraph 42 (*a*), 1 : 1¾ : 3½ in the second column, 1 : 1¼ : 2½ in the third column, and 1 : 1 : 2 in the last column.

The author contends that the use of these equations does not allow sufficient strength for mixtures stronger than 1 : 2 : 4.

He also contends that the strength of a mixture does not vary directly with the ratio of the volume of sand + the volume of large aggregate to the volume of cement, and that regulations such as these should not lay down such a law without ample and sufficient justification.

It will be noticed that, in the mixtures specially referred to in the regulations, the volume of sand is always half that of the coarse material.

Under these conditions and under the further conditions imposed under paragraphs 146, 147, 150, 151, 153 and 154, with respect to the quality and grading of the aggregates, there is evidence from various experiments and tests that the strength of the various mixtures varies closely with the ratio of the volume of cement to the volume of cement + the volume of sand in the concrete.

The inequalities of such a heterogeneous material as concrete, the strength of which must, in the nature of the case, be influenced by many varying conditions, render it somewhat difficult to assert confidently any definite law as to its relative strength with variously proportioned ingredients.

Speaking generally with respect to the L.C.C. regulations as to the strength of concretes, it is contended that there is no true basis for the equations given, that the strengths for concretes stronger than 1 : 2 : 4 are considerably below their proper values and that the universal adoption of these rules would greatly prejudice the use of the stronger mixtures.

It is further contended that equations as suggested by the author may with safety be adopted for assessing the strength of various mixtures, when the volume of sand is one-half that of the coarse aggregate and the grading and quality of the aggregates is that specified in the L.C.C. regulations.

Paragraph 43 allows a working tensile stress of 16,000 lb. per square inch on mild steel without regard to its use in direct or diagonal tension. The limit of 16,000 is, in the author's opinion, somewhat high for use in calculations with respect to diagonal tension, as in this case the actual stress on the reinforcement cannot be accurately determined. It is suggested that for diagonal tension calculations, three-quarters the stress allowed for direct tension is sufficient, which would reduce the working stress for diagonal tension to 12,000 lb. per square inch for mild steel.

For compressive reinforcements in hooped columns, the limit of working stress should be half the stress at yield point, which would be about 16,000 lb. per square inch for mild steel.

Paragraph 54 imposes values for the coefficient "*m*," as shown in Table V., based on the working stresses given in paragraph 42 (*a*) and on the stresses suggested by the author as obtained from equation (1).

The L.C.C. regulations are, in the author's opinion, unnecessarily restrictive with respect to the design and construction of pillars and struts; and, if they are to be complied with, the use of either ordinarily reinforced or hooped compression members will only be economically possible in rare instances.

The regulations provide that the effective diameter or that to the outside of the outermost longitudinal reinforcement shall be used in all calculations for compression members, whether reinforced in the ordinary way or hooped; the working stresses being those given in paragraph 42 (*a*) or the increased value "*i*" allowed under regulation 115.

This provision is unnecessarily restrictive on the employment of columns reinforced in the ordinary way and it is strongly urged that the resistance of reinforced concrete compression members of this character should be permitted to be calculated on the outside sectional area with working stresses on the concrete five-sixths of those given in paragraph 42 (*a*) as altered according to the author's equation (1).

Such a method of calculation for ordinarily reinforced compression members has been the universal practice up to the present and has proved perfectly safe and reliable, and there appears no justifiable reason for the restrictions imposed by the L.C.C. regulations.

Table VI. shows comparative strengths and designs of square columns of 1 : 2 : 4 concrete, and a study of this table will show the effect the L.C.C. regulations will have on the economy of the employment of columns reinforced in the ordinary way.

The restrictions with respect to the spacing of bindings, imposed under paragraph 105 (*a*), are excessive in the case of ordinarily reinforced columns.

In paragraph 180 the author suggests that the mortar mixture should be of the same proportions as the cement and sand in the concrete which is being used.

College of Technology, Manchester.

The governing body of the Manchester School of Technology have decided to alter the name of the Manchester School of Technology, so that in future it may be known as "College" instead of "School."

GENERAL NEWS.

Deceased Estates.

The late Wm. Thorne, of Ashton-on-Mersey, Cheshire, builder and contractor, left estate the net personalty of which was £16,490.

Col. Sir Samuel Swinton Jacob, K.C.I.E., M.C.V.O., aged 76, of Weybridge, Surrey, the well-known Indian architect, left estate the net personalty being £25,956; gross £32,872.

Photographs and Sketches.

Orders have been made by the competent military authorities, under the Defence of the Realm Regulations, prohibiting the making of any photograph sketch, plan, model "or other representation of any place or thing" in the London, Kent, Essex, and Surrey area. No person in this area shall, without lawful authority or excuse, have in his possession any photographic or other apparatus, "or other material, or thing suitable for use in making any such representation." Nothing in the Order is to be construed as prohibiting the making of a photograph, sketch, plan, model, or other representation in any photographic or other studio, or a private dwelling-house, or the garden or other premises attached thereto, of any person or things therein, or as prohibiting the possession of photographic or other apparatus, materials, or things intended solely for use in such studio, dwelling-house, or other premises.

Housing and House Owners.

By invitation of the Lord Mayor, and under his chairmanship, a meeting of the Property Owners' Defence Association was held at the Mansion House last week, and an address on "Houses and Homes" was delivered by Sir William Robinson. The lecturer suggested that by means of concerted action on the part of the architects, builders, property-owners and tenants private enterprise might be enabled to survive. The Government could not, of course, lend money to individuals to build, but, through the municipalities or directly, the money might be lent to trusts and associations, who might say to the Government, "We will undertake to do what you want, and to do it under the conditions which you impose upon the municipalities." The members of such associations must, however, be content to make no individual profit; they must be prepared to make sacrifices in these times. But in the future wages would be higher, and many working men would be able to pay for better houses, even if the Government found it necessary to supply homes for the poorest class without strict regard to the question of economic rent. Thus there would be a wide field for private enterprise. He was informed at the Local Government Board that 172,000 new houses were wanted immediately.

Wainhouse Tower Purchase Scheme.

An appeal has been issued from Halifax for help in raising £1,000 to purchase this tower, and put it into a thorough state of repair. The building, which is in the Calder Valley, was built about forty years ago, in a very substantial manner. "In spite of the above facts," says the appeal, "it has had a chequered career, and has been much misrepresented and misunderstood. Now, however, an opportunity has occurred of securing it cheaply, along with three acres of land suitable for a small park, and dedicating the whole to the public use, and starting the tower on a new lease of life under the ægis of the civic authority. In the present state of the town's finances, we could not reasonably expect the Corporation to buy it and repair it at the cost of the rates. The opposition to such a course would undoubtedly be very strong. We do, however, feel very earnestly that it ought to be Corporate property, and this feeling is shared by a great many people; therefore, the only alternative is to buy it, throughly repair it, along with the fence walls surrounding it, and then hand the whole property to the Corporation as Trustees for the people, to use as they may think proper, and to this end we ask for your help. . . . In order to make this a thoroughly democratic effort and interest as many people as possible in the scheme, it has been decided to appeal for a shilling subscription, and, at the suggestion of the Mayor of Halifax, to limit individual subscriptions to 10s. as a maximum."

Educational Lectures for Wounded and Convalescent Soldiers.

Some weeks ago, several wounded men at the Great Northern Central Hospital made up their minds to organise lectures on educational subjects, chiefly technical. Private Mallet, who, before volunteering early in 1915, was a student in training as a teacher of handicraft at the L.C.C. Shoreditch Technical Institute, approached, on behalf of these men, the hospital authorities, and through Principal S. Hicks, some members of the staff of the Institute. At a meeting held at the hospital, the men stated what they feel they need. Some few want books and guidance in taking up again and continuing their pre-war studies in such subjects as industrial chemistry, mathematics, education, &c. Some are anxious to know something of the training that might be given them in cabinet making, wood-carving, picture frame making, bookbinding, &c. Many are interested in commercial work, others in architecture, while some asked for guidance in the study of English literature. Mr. Harris, chief librarian at the Islington Central Library, offered his services and expert advice in supplying standard technical books on loan to soldiers, and a course of lectures on many of the above subjects will be begun at once. Mr. P. A. Wells, Head of the cabinet-making department of the L.C.C. Shoreditch Technical Institute, commenced the series by giving a lantern lecture on "Furniture" on March 8. The Principal of the Institute will give a lecture on the "Fisher Education Bill, and the Need for Technical Teachers."

House Planning for the Housewife.

A women's sub-committee of the Advisory Council has been appointed by the Minister of Reconstruction to collect information and to give advice on house plans from the point of view of the housewife. It is felt that in the preparation of plans for working-class houses in the past sufficient consideration has not been given to the comfort and convenience of the women who are to live in the houses. It is hoped that no considerable scheme of house building will be undertaken in the future without careful attention being given to the saving of labour for the wife and the convenience and health of the family generally.

The members of the committee are Lady Emmott (chairman), Mrs. L. Barton (Women's Co-operative Guild), Mrs. Victor Branford (Housing Organisation Society), Miss A. Churton (Rural Housing and Sanitation Association), Dr. Janet Lane Claypon (Dean of the Household and Social Science Department, King's College for Women), Mrs. Sanderson Furniss (National Women's Labour League), Mrs. G. S. Guy, Mrs. C. S. Peel (Ministry of Food); secretaries, Miss Leach and Miss Waley (Ministry of Reconstruction).

The duties with which the members have been entrusted are briefly:—To examine specimen houses and to advise on house plans received from the Architects' Committee. They will also report on such questions as internal fittings, position of doors and windows, size and number of rooms, gardens, communal arrangements, and the outlay of new districts in so far as these may affect the well-being of homes and the convenience of housewives. Selected districts both in town and in country will be visited by the committee, and they will get into touch with women whose experience and co-operation might be of value, and who might initiate discussions on housing questions in their own districts. The committee have already begun their duties, and last week they inspected houses on the Kennington estate of the Duchy of Cornwall.

Plans for Resettling Labour.

The Minister of Labour has set up a committee to be known as the Labour Resettlement Committee, to advise him on the problems arising out of the demobilization of the forces. The questions which will be referred to it include not only those connected with the resettlement of soldiers and sailors in civil life, but also those connected with the disbandment of munition workers, as the restarting of industry after the war demands that these two sets of questions shall be treated on uniform lines. All schemes devised for dealing with these questions will be referred to the Committee for their consideration and advice before they are put into operation, and the Committee will be closely associated with their administration. By this means, Mr. Roberts hopes to secure the co-operation of employers and trade unions with the Government, which he regards as an essential condition for success. The Minister of Labour is chairman of the committee and Lord Burnham vice-chairman. The other members, who have been nominated by their respective organizations, include the following:—

Mr. Ernest J. Brown.—National Federation of Building Trades Employers of Great Britain and Ireland.

Mr. John Dewrance.—Engineering Employers' Federation.

Mr. J. J. Burton, J.P.—Central Advisory Committee for the Iron, Steel, and Kindred Trades (employers).

Sir Herbert Austin, K.B.E.—Federation of British Industries.

Mr. W. Bradshaw, National Building Trades Council.

Mr. Arthur Pugh.—Central Advisory Committee for the Iron, Steel, and Kindred Trades (operatives).

Mr. James O'Grady, M.P.—National Federation of General Workers.

Mr. Alfred Short.—General Federation of Trade Unions.

Prudential Assurance Co., Ltd.

The number of policies issued during the year in the Ordinary Branch of this company was 56,502, assuring the sum of £6,951,269, and producing a new annual premium income of £567,472. The premiums received were £5,495,205, being an increase of £265,035 over the year 1916. The claims of the year amounted to £4,852,409, of which £398,385 was in respect of war claims. The number of deaths was 14,629. The number of endowment assurances matured was 28,430, the annual premium income of which was £152,559. The number of policies including annuities in force at the end of the year was 934,075. The premiums received in the Industrial Branch during the year were £9,376,858, being an increase of £479,135. The claims of the year amounted to £4,352,031, of which £1,109,240 was in respect of 65,665 war claims. The bonus additions included in the claims amounted to £38,710. The total number of claims and surrenders, including 22,078 endowment assurances matured, was 402,635. The number of free policies granted during the year to those policyholders of five years' standing and upwards who desired to discontinue their payments, was 56,880, the number in force being 2,009,872. The number of free policies which became claims was 51,290. The total number of policies in force in this branch at the end of the year was 21,730,468: their average duration exceeds thirteen and three-quarter years. The war claims of the year, in both branches, number 70,488 and amount to £1,507,625. The total paid up to the present on this account since the outbreak of war exceeds £3,400,000, in respect of over 160,000 claims. Under the sickness insurance tables in the General Branch the premiums received during the year were £6,721, and £3,744 was paid in sickness claims. Sinking fund policies have been issued assuring a capital sum of £134,850 and producing an annual income of £2,663. The assets of the company, in all branches, as shown in the balance-sheet, are £107,283,371, which, after the deduction of the balance of £3,487,500 owing in respect to the advance from bankers for purchase of War Loan, shows an increase of £4,672,125 over 1916.

CORRESPONDENCE.

The Future of British Architecture.

SIR,—I should like to support as strongly and earnestly as I can Sir Aston Webb's proposal for the appointment by the Institute of a strong committee to consider and report upon the inter-relations between architecture, architects, professional societies and the public. It is nearly forty years since I was first in touch with the work of the R.I.B.A., and it is undeniable that that body has more public influence now than then; but there can be no doubt that its influence is very much weakened by the fact that so many practising architects do not belong to it, nor in fact to any professional society.

What conditions will obtain after the war no one can foresee, but it is certain that architects will have to steer their way through a welter of difficulties connected with labour, materials, finance and so forth, and if we are disunited disaster will be the result.

The time has gone by for petty jealousies and mutual recriminations, and it behoves all who have the interests of architecture at heart to do their utmost to bring about real unity in the profession, and to endeavour to constitute a strong central society for the whole of the United Kingdom, which shall have an undisputed authority warranted by the fact that it represents practically the whole body of practising architects.

46, Berners-street, JOHN SLATER.

*** Other letters on the subject will appear next week.—ED.

Concrete Cottages.

SIR,—Recently looking through Mr. Francis Jones' Life of Edison, the American inventor, I came across the following, which may interest those concerned with the building of concrete houses:—

"Mr. Edison is the originator of a novel method of building houses of solid concrete. He was some years working out the details of this scheme to his own satisfaction, but twelve months ago he completed his experiments, and now it is possible to 'build' a ten-room house in about four days. The simple method is as follows: A steel mould is made into which the concrete is pumped, allowed to harden, and the mould then removed. At present an entire house has not been made in one piece. The foundations, walls, floors, ceilings, &c., are made by pouring concrete into separate moulds and afterwards piecing them together. Even the window frames are temporary shells into which concrete is pumped. When these shells are removed they leave behind solid window frames which it will take centuries to weaken. The origin of Edison's idea is said to have been the increasing cost of brick and lumber.

"The time will most certainly come when whole houses will be turned out in one piece, though each part is now separately moulded. These metallic moulds may be ornate or plain, as the fancy of the householder dictates, and it will be no dearer to have the latter than the former. It only requires some smart architects to draw up designs for a few houses of different patterns and of about the size to suit the family of the average mechanic. The moulds made for each part of the house may even be joined together before the concrete has been pumped in. If more convenient, then the parts may be made separately and joined together with cement afterwards. The concrete will dry in a few hours, though it is considered better to leave the liquid material in the moulds for four days, when the latter may be removed with a perfect confidence that a solid and almost bomb-proof house will remain behind.

"Moulds for a house of ten rooms would cost about £5,000, but they could be used 500 times if necessary, so that the charge of a £100 for a dwelling of the size mentioned would pay the builder very handsomely. This idea of erecting houses in moulds is a very simple and feasible one, and it seems strange that it should have occurred to no one until Edison suggested it. In America to-day many houses are being erected according to Mr. Edison's plans, and are fulfilling all that was expected of them."

Architects, naturally, would not leave unchallenged many of the statements contained therein, and the whole is too theoretical to serve any practical purpose, but contains suggestions which may be of some use. A. A. O.

R.I.B.A. Housing Competition.

SIR,—The first paragraph of your notes in your issue for March 1 is certainly, if the information be correct, interesting reading.

The assessors, however, who have already arrived at their decision in the other areas, do not appear to have had the advantage of the advice and co-operation of this Ladies' Committee. Surely, if the strong body of assessors appointed to deal with the designs submitted in the Home Counties area require this assistance, the assessors in the other areas should not have been placed in such an invidious position.

H. S. EAST.

Gray's Inn Square, W.C. 1.

MEETINGS.

TUESDAY, *March* 19.

Institution of Civil Engineers.—Paper to be further discussed: "Modern Developments in Gasworks Construction and Practice," by Mr. Alwyne Meade, A.M.Inst.C.E. On conclusion of this discussion the following Paper will be presented for discussion: "The Derwent Valley Waterworks," by Mr. Edward Sandeman, M.Inst.C.E. 5.30 p.m.

WEDNESDAY, *March* 20.

Carpenters' Hall, London Wall (Lectures on Arts Connected with Building).—Mr. Banister F. Fletcher on "Westminster Abbey." 7.15 p.m.

Edinburgh Architectural Association.—Mr. H. F. Kerr on "Two Lost Gems in the Crown of Old Edinburgh—Trinity College Church and the West Bow" (Lantern slides). 8 p.m.

THURSDAY, *March* 21.

The Concrete Institute.—Seventy-ninth Ordinary General Meeting. Mr. H. L. Barraclough on "Some Practical Points in the Design and Construction of Partitions." (Lantern illustrations.) 5.30 p.m.

British Artists at the Front.

"British Artists at the Front" is the sequel to "The Western Front," which was illustrated entirely by Lieut. Muirhead Bone. In the present publication the work of various artists will be reproduced. Mr. C. R. W. Nevinson illustrates Part I, Sir John Lavery will be responsible for Part II, and among other painters who have received facilities from the War Office for this purpose are Lieut. Paul Nash, Mr. Eric Kennington, and Lieut. James McBey. To the present number Mr. Campbell Dodgson contributes a note on the artist, while Captain Montague writes the introduction and descriptions. The publication is issued from the offices of *Country Life*, Ltd., 20, Tavistock-street, Covent Garden, W.C.

L.C.C. White Hart Lane Estate. (*See page* 173)
MR. W. E. RILEY, F.R.I.B.A., Superintending Architect, London County Council.

C

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ILLUSTRATIONS.

THE whole of our inset illustrations this week are devoted to L.C.C. Housing schemes and are referred to in an article on the next page.

Design for Aeroplane Hangars.

These sketch plans illustrate a design for an aeroplane hangar to accommodate 10 machines of the large folding type and 18 smaller machines. The main feature of the design is the provision of first floor galleries extending the whole length of the shed, by means of which small aeroplanes can be housed over similar machines on the ground floor, thus utilising the head room rendered necessary by the height of the large machines. The galleries are entered from the flat roof over the central bays of the ground floor and approached by inclined ways. The method of construction proposed is for the framing to be of reinforced concrete or steelwork encased by incombustible material; with the panel walls either of brickwork or concrete slabs.

ARTHUR F. WICKENDEN.

BOOKS.

Hints on Architectural Draughtsmanship. By G. W. HALLATT. (E. & F. N. Spon, Ltd. 1s. 6d. net.)

THIS is an excellent little volume, containing much good advice to architectural students, and is especially useful to those who are about to commence their professional careers. As the author points out, faulty and careless draughtsmanship has frequently ruined the chance of acceptance, by clients and public bodies, of good designs, and it is therefore essential, if one would have a reasonable amount of success, nowadays, to combine a good design with good drawing. In fact, the success of an architect is now, more than formerly, dependent upon his skill as a draughtsman.

The French style, the author suggests, is superior to the English, on the whole, and, urges the student to devote much time to a careful examination of the best works of the French school. To do this, it is not necessary to visit France, though, of course, that would be very advisable. The literature of France abounds with works dealing with art in all its branches, and through this medium the student may gain access to the finest examples of French draughtsmanship. Mr. Hallatt shows that the student, if he possesses ambition, will have to supplement his office studies by other means, if he desires to make himself master of the art of architectural drawing.

Week by week, the profession is becoming the poorer through the loss in battle of many of its brilliant young members, men whose capabilities as draughtsmen were far above the average, and who were inspired, to a great extent, by the example of their Continental confrères, and more especially those of the Ecole des Beaux Arts of France. It is, therefore, "up to" the student, just commencing, to "carry on" the good work which these men have left as legacies to those who shall come after. The book, although not large, covers a good deal of ground. Beginning with a chapter on freehand drawing, which is the foundation of all good drawing, the author takes us, step by step, through all the various stages of an architectural draughtsman's duties.

The student who aspires to a high place in the ranks of draughtsmen will find many expressions in the pages of this book which ought to prove of value to him in his future career.

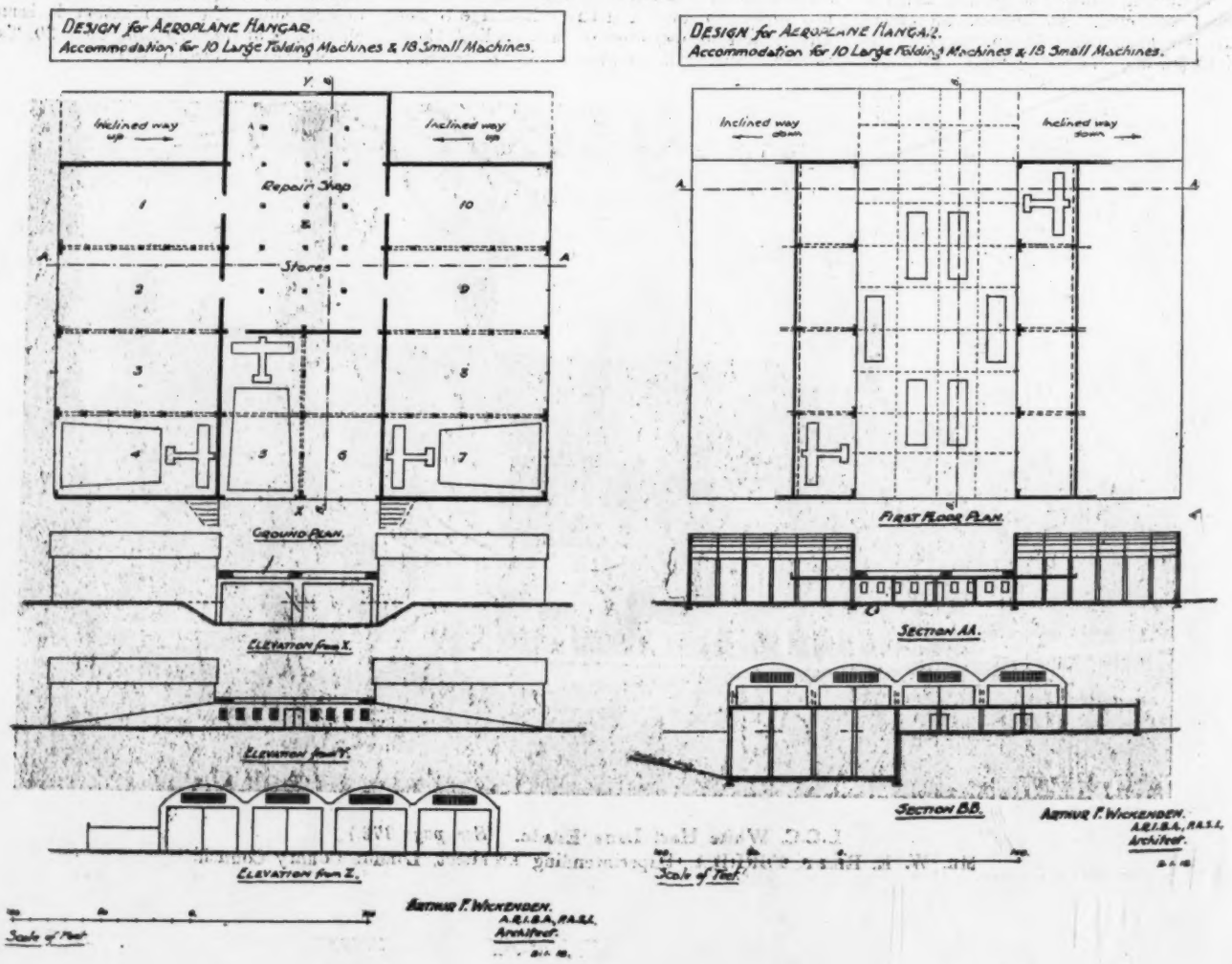
Warming Buildings by Hot Water. By F. W. DYE. (E. & F. W. Spon.) 1917. 316 pp.

THIS book is a thoroughly practical treatise on heating by hot water, containing a great many useful diagrammatic sketches. After opening with the usual elementary explanations of the effects of heat and the principle of circulations the author devotes his attention to example, of two and one pipe systems and his comments on church heating and tables of pipe sizes for main and branches, are of special interest.

In a short chapter (X) he has made a laudable effort to epitomize the information obtainable about various accelerated systems, while the following chapter on "Difficulties," chiefly relative to air in pipes, contains some useful practical hints. We are glad also to see a chapter on "Drying Rooms," a subject which usually receives scant treatment in works of this kind. In the latter part of the book, boilers, pipes, and fittings are described and illustrated, and finally, heating by high pressure water and air warmed by radiators is discussed, and the book concludes with an appendix of useful tabular data. Mr. Dye's book may be commended to all those interested in the subject of hot water work.

The Royal Institute of the Architects of Ireland.

The Council Meeting of the Institute was held at 31, South Frederick-street, Dublin, on the 4th inst. Mr. A. E. Murray occupied the chair. There were also present Messrs. L. O'Callaghan, L. E. H. Deane, R. C. Orpen, G. F. Beckett, J. H. Webb, G. P. Sheridan, E. Bradbury, A. G. C. Millar, F. G. Hicks, F. Batchelor, and Frederick Hayes, Hon. Secretary. Reports from the Professional Practice, Library and Examination Committees were received and adopted. It was decided to offer a prize value 2 guineas to the successful candidate who obtained the greatest number of marks at the forthcoming examination.

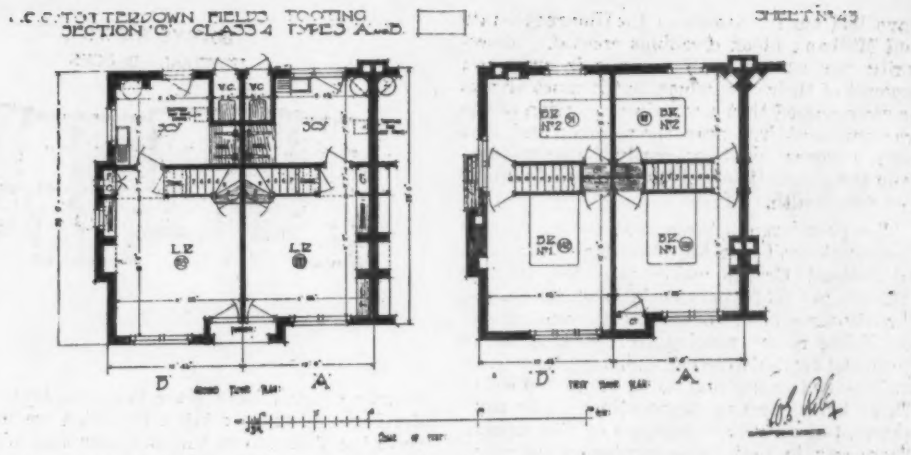


MUNICIPAL HOUSING.

No. I.—THE LONDON COUNTY COUNCIL.

WE think at the present juncture, when a great campaign is being carried on which is largely engineered by politicians for political purposes, and receives somewhat indiscriminate support from bodies of opinion, comprising theorists with benevolent intentions, architects who believe they have discovered a new field for their activities, and Socialists who see in it a means for depreciating land values and rendering it necessary to call upon the activities of the State, it may be useful to review what has already been done by municipal bodies quietly, consistently and conscientiously for a great number of years. As we have frequently and plainly emphasised, this is not a field from which the architect in private practice can expect to obtain much work, for the reason that when housing has to be paid for out of the public rates, it is natural that the work should fall to the official departments of the various public bodies and be carried out under the direction of their appointed professional advisers. More than this, if outside architects are called in, it will only—in most cases—be to provide designs for typical dwellings to be repeated in various combinations by the public bodies in question and to be supervised by their staffs. In addition to this, it is the professional advisers who have acted for municipalities who are in most cases the men having most experience, and, therefore, there is an additional reason why the private architect's help should not be required; while many of the plans produced by private architects are based on a careful study of what has already been exceedingly well done by pioneers.

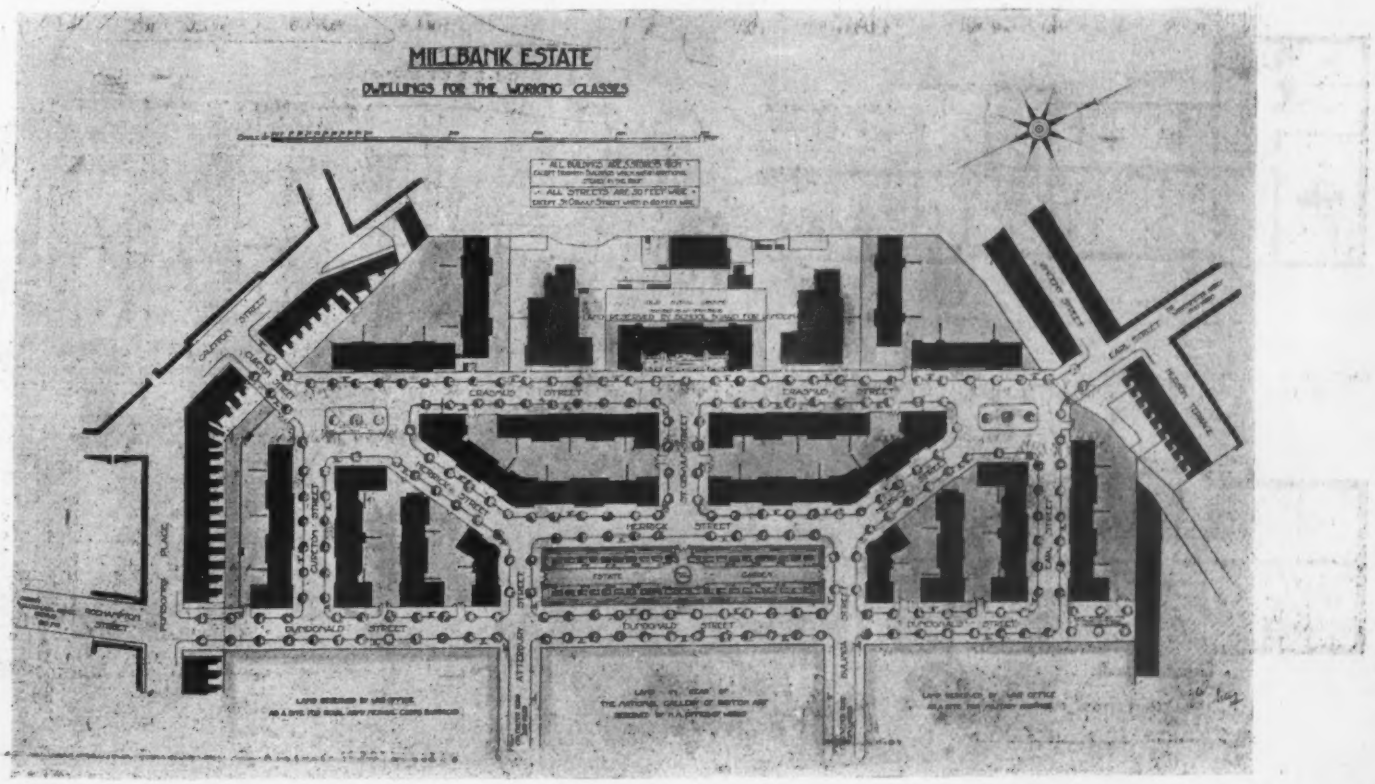
In saying this, we are only stating what is absolutely evident to those who think; but it is very important to architects to realize that if they support State proposals for housing, it should be because they approve them altruistically as citizens, and not because they expect to derive professional profit from them. The alternative course is to remove as far as possible the unnecessary handicaps which fetter private enterprise and to leave the provision of housing to the operation of the laws of supply and demand; and this policy, which we are firmly convinced is the best for the community, may be supported by the architect on grounds of public policy, while it has this additional advantage—that the housing which carried out will be more likely to tend to fall into the hands of the private practitioner. The unlimited extension of the executive powers of the State is, we are firmly convinced, one of the greatest evils which menace the country in the future—an evil which we believe all thinking men should join in opposing.



Municipal housing should, in our view, be confined first to the reconstruction of areas which, in view of the growth of population, have become centres dangerous to the health and well-being of the community; and, secondly, to the limited provision of housing in cases of extreme urgency which legitimate private enterprise, freed from the burdens which at present hamper it, is unable or unwilling to cope with. Housing of this nature may serve to stimulate private enterprise and set a standard to be maintained in the building which springs up in and round such municipal centres. Above all, we must remember that wages should be sufficiently high to cover the reasonable cost of housing the population; and if they are so, we are simply burdening the whole community if we provide rate-aided housing at uneconomic rents. More than this, by so doing we are in effect presenting a bonus to the employer, who will take such rents into consideration in fixing wages—a reason which should make Labour think before it advocates a policy having one inevitable effect. The path of justice is, in a word, the best for the community and for every section of it in the long run.

With this preliminary digression it is of interest to state that since the appointment of Mr. W. E. Riley as Superintending Architect to the London County Council in March, 1899, that body has provided accommodation for 51,518 persons of the working classes in block dwellings, cottages and lodging houses, namely, 27,162 persons in block dwellings, at a cost of £1,237,651; 22,806 persons in 3,155 cottages, at a cost of £870,932 (including the cost of roads and sewers); 1,550 cubicles in lodging houses, at a cost of £106,578. This immense mass of building, of which we shall give selected examples in this and a succeeding issue, has been carried out on sound financial lines, that is to say that the rents paid make provision for the repayment of the money expended in land and buildings after a term of years, when the whole of the property improved or created will be the property of the Council and freed from all charges. It is sometimes stated that the Council has not housed the most necessitous classes of all, but its duty as a public authority is not the provision of charity at the ratepayers' expense, but the promotion of such improvement as is compatible with good administration; and it may be further pointed out that the provision of housing at uneconomic rents has an evil commercial tendency in keeping down wages, coupled with the fact that it would unduly inflate rates, producing a further shortage of employment.

The block dwellings erected by the London County Council, like its schools, form oases of pleasantly designed buildings in the dreariest quarters of London, and, although the greater possibilities of easy access to the suburban districts have led to the adoption of cottage building in outlying districts, it is an architectural gain to the metropolis that we should



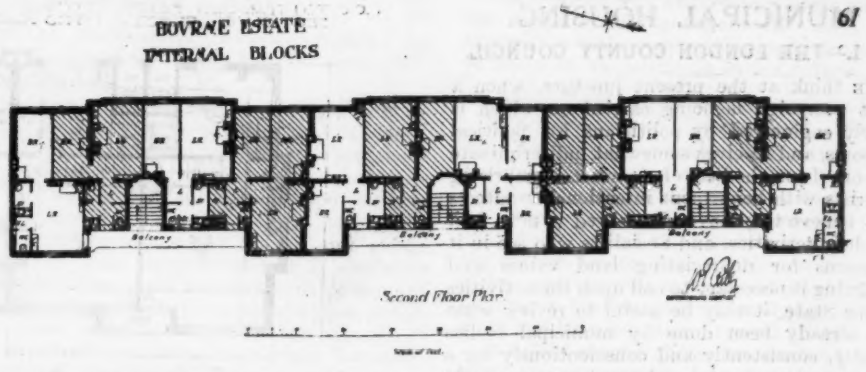
have had such schemes as the Bourne Estate and Millbank block dwellings erected. Necessarily the cost of such schemes is great, on account of their site values, but it must always be remembered that a certain proportion of the workers must live near their work, and that such schemes must primarily be considered from the point of view of the general advantage to public health.

The first large scheme undertaken by the County Council was the Boundary-street area in Bethnal Green, which provided for the rehousing of 5,524 persons in 1,069 tenements. Twenty-three blocks of tenements were erected, the living rooms ranging from 144 sq. ft. in those first erected to 160 sq. ft. in later tenements, and the bedrooms from 96 sq. ft. to 110 sq. ft. Three large gardens, aggregating nearly three quarters of an acre, form part of this scheme. There was in 1912–13 a surplus on the year's accounts of £1,859, after allowing for all outgoings and making provision for a sinking fund. The Tabard-street, Grotto-place, and Crosbie-row areas in Southwark and Bermondsey were subsequently carried out in the Tabard-street area, the number of people accommodated being 4,552, and in the three areas some seventeen acres are dealt with.

Among the various block dwellings, we illustrate those erected on the Bourne Estate and Millbank sites. Of the Bourne Estate scheme the cost of construction of which was £221,000, the late Lord Ritchie, then Secretary of State, said that "no more practicable scheme had ever been presented to a department than that the Council had formulated on the housing question."

The arrangement of this and of the Millbank scheme is well illustrated by the plans and views which we give, and further description would therefore be superfluous. At Millbank, the site of which is situated behind the Tate Gallery, the scheme provided for the accommodation of 4,430 persons, and the various blocks are named after British artists.

Up to 1900, it was only possible for a local authority to provide housing within the limits of its own district, but an amending Act made it possible for any authority other than a rural district council to provide dwellings elsewhere, with the result that the activities of the London



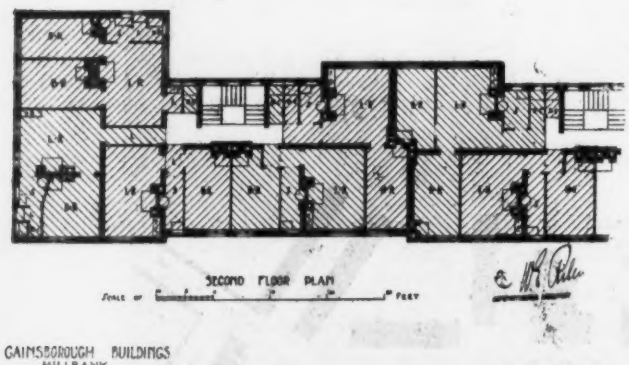
County Council have since been employed in developing cottage estates, of which we illustrate the Totterdown Fields Estate and White Hart-Lane Estate in this issue, which we shall follow with examples of some of the more recent work of the Council at a later date.

Totterdown Fields Estate at Tooting is 38¼ acres in extent, and was purchased in 1900 for £44,238, or at the rate of £1,150 an acre; and on it, 1,261 cottages and flats and four shops have been erected. On the usual basis of two persons per room, the cottages would accommodate 8,729 persons. The principal streets are 45 ft. wide and lined with plane trees; other streets are 40 ft. wide, and the dwellings are two-storied. Five-room cottages with scullery and bath room are rented at 10s. 6d. to 13s. 6d. a week, according to the size of the rooms; four-roomed cottages with scullery and bath, at 9s. to 11s. a week; three-roomed cottages with small additional room and a scullery with bath, from 9s. to 10s. a week; and cottages with three rooms and a scullery vary from 6s. 6d. to 9s. a week. Some of the cottage flats rented at 6s. 6d. a week contain three rooms and a scullery, and others two rooms and a kitchen scullery. The capital expenditure on the estate has been £395,594, and the aggregate balance on revenue in 1916 showed a surplus of £2,104.

The White Hart Estate at Tottenham is the largest purchased by the Council, and consisted of two sections a quarter of a mile apart—the northern one containing 49 and the southern 177 acres; the purchase price of the estate was £90,225, or about £400 an acre. The development of the estate has at present been confined to the extreme southern end, but 963 cottages have been erected or are in course of erection, providing for 7,524 persons; and, as before, are divided into varied classes. The rents charged are 6s. 6d. to 9s. 6d. for three-roomed cottages; four-roomed cottages, from 8s. 6d. to 11s. 6d.; five-roomed cottages, from 9s. 3d. to 13s. 6d. a week; such charges including rates, taxes and water. The roads are planned generally to run north and south, thus providing for direct sunlight to all rooms.

The general architectural character of the buildings we illustrate is excellent; they are pleasing, simple, and in accordance with the character which is traditionally appropriate to the treatment of smaller dwellings; while, at the same time, they are entirely devoid of extravagant or expensive features. We shall deal with other of the admirable work carried out under Mr. Riley's supervision in a succeeding article; but we may add that the student of housing cannot do better than study what has already been done by the London County Council, which has deservedly been considered as a model by foreigners, and shows that there is little to be done which has not already been thought of and attempted, unless, indeed, people who live in smaller houses will abandon some of their conservatism; in which case, further interesting labour-saving and communal ideas might give a new direction to the housing of the working classes.

ROMNEY BUILDINGS MILLBANK.
ROSSETTI BUILDINGS SIMILAR



GAINSBOROUGH BUILDINGS
MILLBANK

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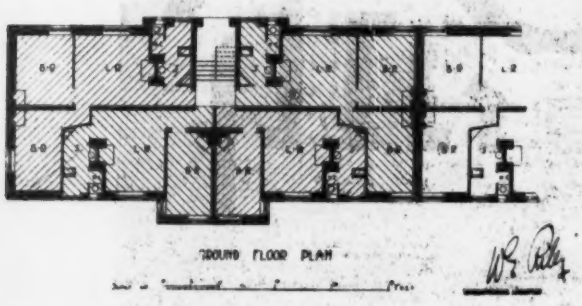
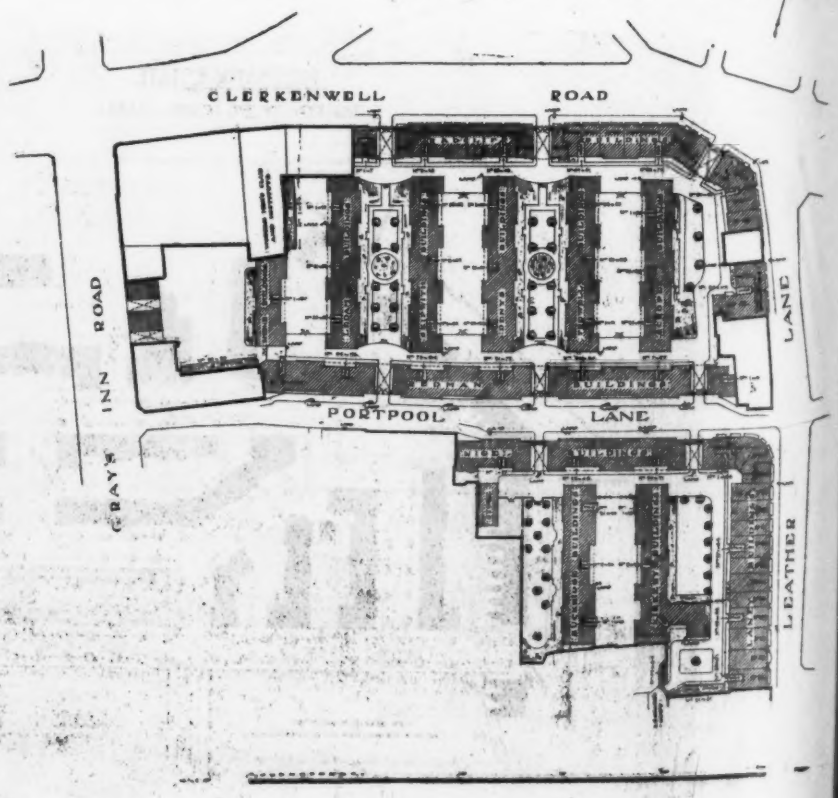


BOURNE ESTATE: LAYING OUT PLAN.



LEATHER
CANE

FUEL ECONOMY IN COOKING APPARATUS.*

LECTURE I.

Introductory.

THE question of Fuel Economy is probably one of the most important which can engage the attention of the community at the present time. Its importance extends not only to the State but also to the private individual. There is probably more national waste due to the unnecessary use of fuel at the present time than to any other single known cause except drink. The greater portion of this waste arises, of course, in connection with industrial plants. We are at present concerned chiefly with that portion wasted in domestic establishments.

The question is important to the State in view of the urgent necessity not only to conserve our fuel supplies, but also to obtain the greatest possible benefit from the immense quantities which Nature has placed at our disposal, and to which our commercial prosperity is directly due. Its relative importance to the private individual is probably even greater. No inconsiderable percentage of the entire income of the poorer class of the community is at present wasted from this cause, not only without any benefit being obtained from the excess of fuel used for domestic purposes, but with a directly detrimental effect.

Of all the fuel used for those purposes to the annual value of perhaps £50,000,000, it would probably be under the mark to estimate that even with the present knowledge three-quarters is wasted unnecessarily in consequence partly of carelessness or ignorance and partly of the defects of present methods of employing the heat generated. Probably much more than one-half is used for cooking purposes. With the advance of knowledge it is conceivable that a small proportion of the present consumption might provide for all requirements. The majority of houses in this country are occupied by the working class. In this class of house only one fire is usually maintained, which is required largely for cooking, including in that term the heating of water for all purposes. The same fire is, of course, useful for warming purposes during the winter, but it is very undesirable for that purpose during the summer. There is no need for a fire during the summer for other purposes than cooking.

The fuel used for institution purposes and what may be generally classed as public cooking, including in that term not only public institutions, such as workhouses, asylums, &c., but also restaurants, bakehouses and the like, forms a probably inconsiderable fraction of the total used.

Coal has been up to the present so relatively cheap and plentiful in this country that there has been an insufficient incentive to the design of economical plant. The waste occasioned either by defects or by unnecessary consumption is of a character not easily detected. A person who is misusing fuel in cooking plant cannot see the heat running away to waste. It would need a certain amount of imagination and calculation to enable even a careful person to translate that waste mentally into terms of pounds, shillings and pence per annum. Even given that calculation, yet a further one would be necessary to force upon the attention of such a person the important proportion which that total annual waste may bear to the total income concerned. Hence private persons are content to go on from year to year without any serious effort towards economy. Indeed the conservatism of the rather ignorant class of person who often actually do the work is so deeply ingrained that they would even resent any attempt to change.

The fuel is wasted partly by defects in the stove and apparatus used, and partly owing to the ignorance and extravagance of the person conducting the operation. It may be well to consider both these questions.

* A course of Lectures delivered at the University College, Gower-street, by Mr. A. H. Barker, B.A., B.Sc., January 23, 1918, and subsequently.

It may be said generally that the principal practical difficulty in securing a desirable improvement will be found to be the conservatism, ignorance and carelessness of the great majority of persons engaged in cooking operations. It will probably never be possible entirely to overcome this difficulty, although much may be done by education. Much more may perhaps be done by so constructing the plant that it is more difficult to waste the fuel than it is in ordinary plant of to-day, even though such an alteration in design has a prejudicial effect on the convenience of the plant in use.

Economic Question.

Perhaps the root of all the difficulties is economic in character. As in all such problems, it is, unfortunately, the poor who chiefly suffer, and who from no fault of their own are the chief offenders. If apparatus is to be made more economical it must, in many cases, almost of necessity be more complicated and more expensive in first cost, and perhaps require more space. In no case can the greatest economy be secured without the exercise of care and intelligence, which implies education.

The rich man, to whom economy in fuel is of relatively small importance, can easily afford to buy not only education but also economical and expensive fittings, and allow plenty of space to fix them in. He can buy an expensive central heating and hot water supply apparatus to heat his rooms and supply his house with abundant hot water for a few pence a day. He can afford to buy the latest thing in gas or electric grillers, although the economy secured by the proper use of such is of small importance to him. Indeed, his servants generally see to it that no economy in design ever affects him in pocket at all. The poor, living in one or two rooms, have little effective education or natural intelligence and have perforce to be content with the miserable fittings crowded in by the jerry builder. There is generally insufficient space to put in a proper set of economical fittings. They have to make up for the inefficiency of their appliances by the extravagant use of fuel, which they cannot afford to pay for and which the nation cannot afford to waste.

The poorest have to do their cooking as best they can with the most extravagant and inefficient appliances of all—a saucepan and an open fire. Their brains are too stunted owing to their environment to enable them to learn even how to make the best of this pathetic outfit. The idea of teaching them which has commended itself to some of our educators is to take them into the kitchen of a technical school fitted out with thousands of pounds' worth of the latest devices and to watch the teacher prepare expensive foods which they could not possibly afford to buy for their own private use.

The wisdom of our educators has not, up to the present, risen to the point of recognising that the most important direction in which to educate women has to do with these domestic matters exactly as they touch very closely the intimate private life of everyone of us from the highest to the lowest. It has been thought proper to leave young persons destined to be in future charge of our households totally innocent of any knowledge of the immense amount of science involved in those highly skilled and excessively important operations, to grow up completely and grossly ignorant of the very nature of foods or of the elements of scientific hygiene in all its multifarious applications to domestic matters. But things being as they are, we must make the best of them until such time as it is possible to improve them.

The principal object of this course is to consider how far and in what way the cookery engineer and the cook can co-operate towards national economy in fuel. If it is possible for an ignorant or careless woman to waste fuel in a plant it may be taken as an axiom that she will do it. We wish to discuss how far it is possible so to design the plant as to make waste of fuel, if not actually impossible, at least difficult. In some cases it may be found that great economy is not incompatible with extreme simplicity. In the case of other kinds of plant improvement in economy can only be effected by a certain small increase in the complexity and consequent cost of the apparatus and possibly some diminution in general convenience in use. It is rarely possible to combine the maximum of convenience with the maximum of economy. It is almost always true of all apparatus designed to use heat that the better the apparatus, the better the facilities provided for securing economy by careful use, the greater also are the facilities thereby provided for wasting the fuel [by careless or ignorant management.

Absence of Incentive to Economy.

One very serious practical difficulty in connection with any attempt to improve matters is that as things are at present there is a marked absence of direct incentive to develop designs with a chief object of securing economy of fuel. In the national interest this consideration ought, in all cases, to be one of the prime objects of the design. It ought to take precedence of appearance and even of convenience of use. That little consideration is generally paid to this feature at present is due to the following facts.

The vital interest of the State in this matter has not hitherto been recognised. The person who has to pay for the fuel is only in few cases the same who owns the stove. The jerry builder who puts up the house cares nothing but to put up a showy house that will sell.

The landlord is usually unwilling to incur additional expense in order to save the tenant's fuel. Indeed, the absence of recognised standards makes it difficult to ensure that any such expense would be attended by improvement. In any case, it certainly would not be a good investment from the landlord's point of view; it would not help to let the house at a larger rent—no incoming tenant ever considers the economy of the kitchen fittings in his estimate of the merits of the house. In fact, if he did but realise it, a difference in the quality of these fittings may be the equivalent of £5 or £10 in the rent value of the house.

The fact that private consumers do not appreciate the loss occasioned in this way causes the demand for economy in the design of cooking plant to be very restricted. The makers of such plant are not faced, as they should be, with the alternative of either designing reasonably economical implements or of failing to sell what they do design. Any ironfounder at the present time can put upon the market a highly polished and ornamental coal range, for instance, and sell it quite readily in spite of the fact that it may be grossly extravagant in use, as most of these ranges, particularly the cheaper types, are—a fact of which the maker himself may be totally ignorant. Few makers probably have any idea whether their manufactures are economical or the reverse. Indeed, it is possible to believe that few makers even understand the essential principles of fuel economy or pay any consideration whatever to that important question. The sole commercial object these makers need have in developing the design is to make it of good appearance, convenient in use, and cheap in construction; to make the castings accurately so that they will screw together without any fitting, and in such a way that, given a certain unlimited fuel consumption, the temperature required can be maintained in the ovens and elsewhere. Indeed, it would not be too much to say that if a manufacturer were to design an appliance with chief regard to the most economical principles it would be probably either so expensive or so inconvenient in use that it could not be sold to advantage. Something, either in cheapness or convenience, must probably be sacrificed for the sake of economy. I shall discuss this point later.

Hiring of Cooking Plant.

The matter is made even worse by the tendency which has grown up of recent years by which the gas or electric cooking stoves used in a small private house, and even an institution,

are not the actual property of the tenant or the proprietor of the house, but are hired out to him by large companies, such as gas or electricity supply companies, at a very low rate. The commercial object of these companies in following this course is quite obvious. They desire to place these fittings in the hands of the consumers and to connect them to the companies' mains, so that the consumer would have every facility for using gas or electric power. It is on this that the companies rely for their profit on the transaction and not on the adequacy of the rent charged for the appliance. The latter often appears inadequate to provide for depreciation and interest on capital cost of the plant.

It is evident that, in course of time, any large supply company will have out at hire scores of thousands of pounds worth of cookers, or stoves of various kinds. If then at a particular stage some considerable improvement in construction is invented, such as would reduce the consumption of gas or electrical power in a noteworthy degree, these large commercial companies have a double reason for not taking kindly to the innovation. In the first place its general adoption would reduce very largely the total sale of gas or electricity. In the second place they already have out on hire an immense number of old pattern appliances, totalling to a very large value. The virtual scrapping of this large amount of plant which strictly economical considerations would demand, would obviously result in a very large capital loss and a decreased sale of gas. Their interests, therefore, militate against the development of natural improvements, which would arise in the ordinary course of things, as the consequence of the combined thinking powers of inventors engaged in their competitive manufacture.

I am not mentioning this fact in reproach to these big companies; I know well that many of them are among the most enlightened and progressive commercial companies in the country and even against their own apparent interests do as much as they can to develop economy. The situation is forced upon them by the circumstances. It is thus plainly evident that the incentive to the development of economy is wholly absent—absent from the private consumer's mind because he does not know any better, absent from the builder and landlord because they have no reason to care, absent from the supply companies, because it is directly contrary to their commercial interests, and therefore, as a consequence, absent from the inventors and makers of the appliances, because they are dependent for sales very largely on the foregoing. Their concern is only to make what they can sell.

Government Control of Design.

It therefore appears that the only way that the very necessary and desirable improvements in design to secure greater economy in fuel can be effected would be by direct Government action in the matter. Here again any possible course is full of difficulties. What are we to do with the millions of pounds' worth of extravagant plant already in use? The British spirit up to the present has not been enamoured of Government interference with private or semi-private concerns. Experience has, in fact, deeply ingrained into the consciousness both of the private individual and of the manufacturer that the less Government Departments have to do with anything of the kind the better for everybody concerned. Even though, as is to be hoped, there will be a transformation in the attitude of public departments and officials towards such matters after the reconstruction consequent on the War. it will take many years before the deeply ingrained prejudice against Government interference is eradicated from the mind of the public. Any Government action will therefore be fraught with immense difficulty.

I shall suggest later on in this course the possible lines on which such regulations might conceivably proceed. Broadly speaking, it appears that persons who make and sell appliances for the consumption of fuel for cooking or other purposes should only be allowed to do so under Government licence, and that any fitting put upon the market by them or any fittings hired out by supply companies should receive the approval of a highly trained and really expert staff of inspectors who thoroughly understand every point connected with this matter, and perhaps after a thoroughly practical and scientific test has been made on it by a competent authority

What is Heat?

As we wish to discuss from the scientific standpoint the whole subject of the practical application of heat to the purposes of cooking, it will be well to start at the beginning and to keep steadily in mind what it is we are using when we employ heat for any purpose. Heat is essentially a form of energy or power of doing work. This energy exists in many forms and can be transformed from one to the other. Heat is the lowest or most amorphous of these forms of energy, that form into which all other forms tend to degenerate. When any form of energy is degenerated into heat, the heat tends to escape and diffuse itself into the surroundings. Thus, if we make any body hot and place it in any surroundings whatever, the heat in the hot body will always try to escape into the cold surrounding bodies, whether these are the walls of the vessel or chamber in which the hot body is placed, or the surrounding cold air. We can try to imprison this heat in all sorts of ways to prevent this loss, *e.g.*, by placing obstacles in the way of its escape.

It escapes by conduction to solid bodies with which the hot object is in contact, by convection to the air which surrounds it, and by radiation, which is the same process by which we receive heat from the sun and by which heat can easily escape even across a vacuous space. Thus, if we place a hot body in contact with a solid body colder than itself heat will escape from the hotter into the colder body. If, in order to avoid this loss, we place the hot object not in contact with a solid but in air in any degree colder than itself, a continual stream of heat will escape from the hot object into the air. If, in order to avoid this loss also, we place the hot object within a vacuous chamber from which all the air is withdrawn, the heat will still escape to the walls of the chamber by radiation. In this case the heat energy is converted at the surface of the hot body into what is called "radiant energy," and this is again converted into heat when it strikes the walls of the enclosure, which thereby become warm. But the air is in contact with the outside of the walls of the enclosure so that there is a continuous stream of heat lost from that exterior surface, which heat originally comes from the hot object, first by radiation, then by conduction through the walls of the enclosure, afterwards by convection into the open air.

It is thus evident that in all practical cooking operations there are many avenues through which the heat of the food and of the fuel pours away without serving any useful purpose. It should be the prime object of the scientific engineer to devise means to close these avenues as far as possible, so that the maximum possible quantity of the heat is concentrated on the food to be cooked and as little as possible allowed to escape to the air. The measure of his success in attaining this object will be represented by what we shall call the "efficiency" of the process adopted and the "efficiency" is the one vital factor in fuel economy.

Clearly, then, if we are to attain a high efficiency it is necessary to discover means for preventing the escape of heat from the hot chamber in which the food is kept by every possible device that we can invent. The more we can reduce the escape—for we can never wholly prevent it—the less we shall have to supply to maintain the temperature.

Sources of Heat.

The energy from which we derive heat is in almost all cases stored up for us in the chemical form, principally as coal, partly also as petroleum and other forms of less importance. Almost the only practical method devised up to the present for using in the form of heat the chemical energy stored up in fuel consists in burning it, either in the solid form or as gas—that is, in allowing it to combine chemically with the oxygen of the air, which process is attended by the transformation of that energy into heat residing in a very large volume of products of combustion, and in snatching at a small portion of this heat while it is on its way to be dissipated in the open air. The means devised for rescuing this fraction of the total heat developed from burning fuel that has been devised up to the present consists, broadly, in allowing the hot products of combustion to come into contact with cooler surfaces, to which some of the heat of the hot gas on its way to the open air is communicated by conduction. It is much as if a man who wanted a drink were to pour a bucket full of water down the drain and put his lips to it as it was flowing away.

The only other process by which the energy can be utilised as heat is to cause some of the heat so generated to be converted into mechanical work by a process of communicating it to air under pressure as in a gas engine. This air is allowed to expand and so perform its work, using up some of the heat in doing so, the remainder being thrown away. This work may be converted into electrical energy, which latter can be used again to generate heat.

The first process is that commonly employed in ordinary cooking either by solid fuel or gas. We may regard the second process as that which is employed in electrical cooking. In fact, however, the first process is very often or usually employed as well as the second in generating power with the further loss attendant on it.

These are the only two fundamental processes in use at the present time for utilising the energy of fuel as heat, and each of them involves a very large waste.

This is the best that Science has been able to do up to the present with this invaluable store of energy. It will be seen that both of these processes involve burning the fuel in one way or another before we can use the energy it contains. Any process which involves the burning of fuel necessarily involves a huge waste, because in doing so we are using energy to heat air which we do not want to heat. If we eliminate the products of combustion we should at once save a large part of the heat now wasted. I have no doubt that the principal discovery of this century will consist in improving on this crude and wasteful process.

Until, therefore, some such improvement is made by the practical man of science in these essential processes, we have to carry on as best we can with them as they are.

Comparison of different kinds of Heat for Cooking.

It is impossible to make any general statement to the effect that this or that method of supplying heat for cooking purposes is more economical or better than another. It depends altogether upon the point of view from which the question is being considered. Let us then consider these processes from the point of view of the consumption of coal. Coal is an extraordinarily complex substance, containing a large number of different chemical compounds, some of which are known to be at present of great value for various purposes, and which can be obtained from coal by various processes which we need not at present consider.

Speaking generally, the only use we are in general making of these complicated and valuable products at the present time is to burn them and, as has been shown, to waste most of the heat so obtained. What we really require is to use the fuel in such a way that the work required is done with the minimum of waste and with the maximum production of whatever valuable products we can make use of. The expression "valuable" in connection with a product is a relative term. Some of these products obtainable from coal may possibly be of extreme value if we can only learn how to use them. If we do not know how to use them they

THE BUILDING TRADE.

THE PAINTING TRADE UNDER EXISTING RESTRICTIONS.

WHEN the use of white lead was prohibited by the Government, excepting by special licence, some time since, builders and decorators were much exercised in mind as to how the restrictions would affect the painting trade. Since that time practically all the staple articles used by painters have been similarly restricted, the most important being zinc oxide and zinc compounds, including lithopone, turpentine and turpentine substitutes, rosin and rosin oils, methylated spirits and, more important than all, linseed and other drying oils.

At first sight it would appear that these regulations would put a stop altogether to the painting business, but, as a matter of fact, they are intended partly as a scheme of rationing, and excepting linseed oil—the whole stock of which is required for Government purposes and for food—a reasonable amount of the other materials will be allowed to be used.

The question naturally arises as to what materials can be now employed for painting without a special permit being obtained. Taking linseed oil first, as being the most important, it is satisfactory to learn that a number of eminent chemists connected with the National Federation of Paint Manufacturers have been engaged for some time past in endeavouring to produce substitutes for this oil from what are known as "fatty acids," which may be defined as the residue of oils after the glycerine which is needed in the manufacture of explosives has been extracted. It is reported that this research work has been very successful, and that later on more substitutes derived from this source will become available. This will unquestionably ease the situation materially later on. In the meantime, the painter who wishes to proceed with his work without taking the trouble of obtaining a permit must make shift with the best materials he can obtain.

Probably the material which will help him most is varnish, preferably of the class known as "pale oil mixing varnish." It is common knowledge that all oil varnishes require from one to two years' storage in a uniform temperature in order to mature. It is fair to assume, therefore, that the stocks in existence throughout the country are fairly large. The varnish should be used with an equal quantity of raw linseed oil. It is also reasonable to assume that stocks of white and coloured enamels are considerable. For exterior work, where white or a light colour is insisted upon, first-class enamels are undoubtedly the best materials to use, particularly as they are very durable when exposed to the weather. If coloured paints can be employed the earth colours, such as yellow and red ochres, sienna, umber, Indian and Venetian reds, iron oxide, the blacks and graphite, mixed with varnish and oil would produce a durable paint. Some of the pigments mentioned can be used alone, but in most cases an admixture would be desirable. For example sienna does not possess much body or opacity, but would serve well to brighten up ochre. Again, graphite can be mixed with advantage with iron oxide; in fact, any of these pigments named could be mixed together without danger of being adversely affected. For interior work, flat wall finishes or washable distemper, either plain or varnished, can be used with good effect both on the walls and woodwork. The stock, however, of both materials is getting low, and it might be necessary to use ordinary distemper made of chalk mixed with colour, and to bind it with size to an extent sufficient to enable it to be varnished. In the case of walls distemper can, of course, be used without varnish.

With reference to turpentine and its substitutes, it is difficult to suggest an alternative, and a permit would be necessary, because the substitutes, which consist mostly of "white spirit"—a petroleum product not unlike petrol—is included within the Order.

Methylated spirits could be substituted by wood alcohol (methyl alcohol). This material is also difficult to obtain, but those engaged on Government work would doubtless be successful in obtaining supplies.

At the present time colours are affected by the restrictions only when they are derived from a metal basis. The use of earth colour and varnishes, therefore, appears to be the most satisfactory solution of existing problems for the painter. A. S. J.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

BARDNEY.—At a meeting of the Welton R.C. a letter was received from the Bardney P.C. enclosing a communication from the Railway and Agricultural Workers' Union, asking for the erection of 30 new dwellings suitable for workmen, and urging that the Council should have some scheme ready to be put into operation immediately after the war.

BELFAST.—The T.C. has decided to adopt the recommendations of the Electricity Committee for the extension of the electricity works at a cost of over £300,000. It is proposed to erect a new generating station at the harbour.

CARDIFF.—Plans passed by T.C.: Van-shed and loft, rear of 12, Pearl-place, for Mr. F. Chapman; connecting bridge, 25 and 27, Charles-street, for Mr. T. J. Coggins; coal house, 50, Merches-gardens, for Mrs. Evans; store, adjoining 18, Park-grove, for Miss Dorothy Davies; extension of glass roof, 35, Cosmeston-street, for Mr. J. C. Naylor; conversion of office into dwelling house, Woodville-road East, for British Co., Ltd.

CHEPSTOW.—The Chepstow R.C. has resolved to prepare plans for the proposed housing scheme at Severn Tunnel.

DERBY.—The T.C. recommends the Council to grant £550 for the purchase from the trustees of Mrs. G. B. Cowndrow of 153 and 1555, Abbey-street, with a large yard in the rear, having a total area of 520 sq. yd., for the purpose of enlarging the playground of the adjacent school. The Estates and Improvement Committee recommends the Council to make application to the L.G.B. for authority to prepare a town planning scheme for an area partly in the borough and partly within the urban district of Alvaston and Boulton and the rural districts of Belper, Shardlow, and Repton.

GLASGOW.—Messrs. Alex. Stephen & Sons, Ltd., Govan, have come to an agreement with the Corporation in regard to their proposal to lay sidings into their works at Linthouse, from Renfrew-road.

LEWISHAM.—Drainage plans passed by B.C.: At 85 and 85a, Rushey-green, for Mr. J. Watt; at 9, Faversham-road, for Mr. F. G. Rose.

MANCHESTER.—Plans passed:—Alterations to cloak room, &c., of works, Chatham-street, Clayton; substation to works, Chatham-street, Clayton; porch to offices, Calder-street, Great Bridgewater-street; staging to works, Crabtree-lane, Clayton; alterations to store of works, Crabtree-lane, Clayton; addition to store, &c., to premises, Queen-street and Higher Sheffield-street, Ardwick; twenty-one steel chimneys to works, Clayton-lane, Clayton; economiser shed to works, Clayton-lane, Clayton; machine room to works, Great Jackson-street, West Gorton; workshop, Upper Brook-street and Nelson-street, Chorlton-upon-Medlock; store, Slade Hall-road, Rusholme; additions to hostel, Portland-street; additions to employment bureau, Parker-street; store to works, Clayton-lane South, Openshaw; steel chimney and stove shed to works, Clayton-lane South, Openshaw; alterations to boiler house of abattoir, Green-street, Withington; conveniences to warehouse, Whitworth-street and Atwood-street; alterations to bakery, Parrott-street, Clayton; addition to premises, 78, Deansgate and College Land; addition to hoist of warehouse, 86, High-street; drains, Royal Exchange Extension, St. Ann's-square; core-maker's shop to works, Clayton-lane South, Openshaw; machine room to works, Great Jackson-street, West Gorton; shop front, 72, Market-street and Barnes-street; timber drying shed to works, Broughton-lane, Cheetham; petrol store to Ashenhurst Works, Blackley New-road, Blackley; dipping shed to works, Clapham-street and Tymm-street, Moston; works, Cheetwood-road, Cheetham; petrol store, &c., to garage, Hayes-street, Whalley-street; alterations and additions to offices, Bengal Mills, Cambrian-street and Upper Helena-street; weigh office, &c., to works, Bank-street, Clayton.

NELSON.—Efforts are being made by the Nelson Y.M.C.A. to raise funds for the establishment of a permanent memorial hall in the town.

NEWBURY.—Plan passed by T.C.:—New workshops, King's-road, for Messrs. Plenty, Ltd.

NEWPORT (ISLE OF WIGHT).—No tenders having been received for the erection of the proposed refuse destructor, the Borough Surveyor has been instructed to carry out the work by direct labour.

NEWPORT (MON.)—A scheme has been approved by the T.C. for the construction of a sewer, a mile in length, to drain the district on which the new works of the British Mannesmann Tube Co. are being erected. The cost will be £57,200. A number of workmen's houses are to be built in the district.

NEWTON-IN-MAKERFIELD.—The attention of the Housing Committee has been called to vacant land between Cross-lane and Victoria-road, and the surveyor states that excluding a strip which would be reserved for the erection of better-class houses, there were 19 acres which could be laid out for the erection of from 230 to 280 houses. The surveyor has been instructed to prepare a plan and scheme for the erection of the houses.—Consideration is being given to a scheme to construct a road between Haydock and Earlstown. It is estimated that the fencing will cost £321 and the sewering £500.

NEW ZEALAND.—A recent serious fire at Christchurch destroyed a block of buildings containing offices and a vaudeville theatre belonging to an important theatre-owning syndicate. The buildings also contained a large organ, insured for £4,000. It is intended to rebuild the theatre at once, and on the most up-to-date lines, and later to replace the organ. Recent issues of the *Evening Post* (Wellington) have given particulars of proposed new buildings in Wellington, which include a fever hospital and residential flats. The former building will cost £25,000, and will have six wards with accommodation for 59 patients. The flats will be of reinforced concrete, comprising 20 self-contained residences. The building will be fireproof, and an automatic lift and a roof garden will be among the features of the building. Commenting on the latter project, H.M. Trade Commissioner writes that, while this system of housing has been tried in other parts of the Dominion, the Wellington City authorities have not previously looked upon proposals of this kind with favour. Owing, however, to the limitation of building area in Wellington, it seems almost certain that the erection of residential flats will in the future become even more necessary.

OSSETT.—Plans passed by T.C.: Drying shed at Paleside Oil Works, for Messrs. Firth Bros.; two dwelling houses, Church-street, for Mr. R. Spurr; alteration to shed, Spa-street, for Mr, Illingworth.

PEMBROKE.—A L.G.B. inquiry has been held into the U.C.'s application for sanction to loans of £20,000 and £10,000 for purposes respectively of completing schemes for the erection of houses for the working classes and extending the electricity supply.

PEMBROKE (IRELAND.)—A L.G.B. enquiry has been held into the application of the U.D.C. to borrow £20,000 for the completion of the housing scheme.

PLYMOUTH.—Plans passed by the T.C.:—Alterations, Repertory Theatre, for Mr. R. Watts; alterations Foresters' Hall, the Octagon, for Mr. R. L. Ewing. Plans are before the Council for six dwelling houses and alterations to four houses, St. Budeaux, for Messrs. Bond & Pearce; and for alterations at 100, 101, and 102, Union-street, for the Young Men's Christian Association.

READING.—Plans passed by T.C.: Lavatories, cloak room and kitchen, Nine Elms Ironworks, Oxford-road, for the Pulsometer Engineering Co.; covered way, Yield Hall Foundry, Yield Hall-lane, for Mr. J. Wilder.—The Housing and Town Planning Committee has considered a report by Mr. E. Culpin on the preparation of a scheme for the provision of working-class dwellings. It is recommended that a scheme be prepared for about 500 houses on the garden city principle in the southern part of the borough, and the Committee is to ascertain the terms upon which Mr. Culpin would undertake to advise in the matter and prepare the necessary plans and estimates.

SHEFFIELD.—Plans passed by T.C.: Alterations, Foggitt Health Food Stores, Snig-hill, for Sheffield Corporation; office additions, Weedon-street, for Messrs. Wm. Jessop & Sons, Ltd.; factory, Acorn-street, for Mr. G. Cave; blacksmith's shop, &c., Washford-road, for the Effingham Steel Works; pattern store addition, Millsands, for Messrs. W. Buckley & Co.; shop front alterations, Chesterfield-road, for Messrs. Charles Senior & Sons; motor house, Crescent-road, for Mr. J. H. Woolatt; rolling mill addition, Leeds and Milner-roads, for Messrs. Brown, Bayley's Steel Works, Ltd.; additions, Stanley-lane, for Messrs. Snow & Co.; hammer shop additions, Penistone-road, for Messrs. J. H. Swift & Sons, Ltd.; addition, Upwell-street, for Sheffield Corporation, Electric Supply Department; canteen additions, Savile-street East, for Messrs. Thomas Firth & Sons, Ltd.; alterations, Broomfield-road, for Mr. J. Bradbury; weigh offices, &c., Upwell-street, for Messrs. Thomas W. Ward, Ltd.; weigh office -alterations and drainage, Bernard-road, for Messrs. W. Moore & Co.; offices, Effingham-road, for Messrs. H. Rossell & Co., Ltd.; fettling shop addition, Penistone-road, for Messrs. S. Osborn & Co., Ltd.; electric melting

* See also our list of Competitions, Contracts, &c., on page 178.

furnace addition, Vulcan-road, for Messrs. E. Allen & Co., Ltd.; steel warehouse addition, Rutland-road, for Messrs. Burys & Co., Ltd.; retaining wall, St. Charles-street, for Sir Joseph Jonas, Colver & Co., Ltd.; workshop additions, &c., Don, Castor and Clixby-roads, for the Standard Piston Ring and Engineering Co., Ltd.; additions, Edmund-road, for Mr. Wilmot North; wire store, Saxon-road, for Messrs. Hardy & Arliss; alterations, Broadfield-road, for Messrs. W. Ward & Sons; canteen, Chippingham-street, for Messrs. Dunford & Elliott, Ltd.; steel store, Chippingham-street, for Messrs. Dunford & Elliott, Ltd.; steel warehouse, Effingham-road, for Messrs. J. Boardshaw & Sons; electric motor house, Chippingham-street, for Messrs. Dunford & Elliott, Ltd.; garage addition, Solly-street, for the Sheffield Flatware Co., Ltd.; vegetable store, Princess-street, for Messrs. T. Firth & Sons, Ltd.; alterations and additions, "Stafford Arms," Stafford-street, for Messrs. S. H. Ward & Co., Ltd.; alterations, Malinda-street, for Messrs. D. Doncaster & Sons, Ltd.; alterations, Mary-street and Shoreham-street, for Messrs. J. Robson & Sons, Ltd.; office additions, Vulcan-road, for Messrs. Hadfields, Ltd.; additions, Rutland-road, for Messrs. S. Osborn & Co., Ltd.; projectile piercing plant additions, Brightside-lane, for Messrs. Vickers, Ltd.; offices, Hawke-street, for Messrs. Vickers, Ltd.; additions, Worthing-road, for Messrs. Jno. Holding & Co., Ltd.; alterations, Soho-street, for Messrs. Jno. Shaw, Ltd.; additions, Parkwood-road, for Messrs. Geo. Longden & Son, Ltd.; steel warehouse, Stevenson-road, for Messrs. Sanderson Bros. & Newbould, Ltd.; offices, Savile-street East, for Messrs. Jno. Brown & Co., Ltd.; alterations, Carlisle-street East, for Messrs. Cammell, Laird & Co., Ltd.; wash-house, &c., Cavendish-street, for Messrs. Freeman, Oakes & Co., Ltd.; staircase addition, Leveson-street, for Tempered Spring Co., Ltd; cellar addition, Westbury-street, for Messrs. Langton & Sons; offices, Tinsley Park-road, for Messrs. J. Wilkinson & Sons; blacksmith's shop, Neepsend-lane, for Messrs. J. H. Andrew & Co., Ltd.; shop window alterations, Langsett-road, for Mr. Cohen; additions and alterations, Slack-lane and Penistone-road, for Messrs. J. Capper & Son; office addition and alterations, Clough-road, for the Sheffield Scissor and Razor Co., Ltd.; tram-passenger shelter, Leopold-street, for the Sheffield Corporation; garage, Chippingham and Beall-streets, for Messrs. Dunford & Elliott, Ltd.; Siemens furnace extension, Savile-street East, for Messrs. T. Firth & Sons, Ltd.; alterations and additions, Upperthorpe-road and Oxford-street, for Rev. Hy. Cecil; alterations, Norfolk-street, for Mr. Jas. Morrison; additions, Vulcan-road, for Messrs. Edgar Allen & Co., Ltd.; gateway alterations, Effingham-road, for Messrs. Davy Bros., Ltd.

STRETFORD.—Plans approved by the U.D.C.:—Paving approach to Bakery, Northumberland-road, for Messrs. W. J. Brookes & Sons, Ltd.; canteen to works, Trafford Park-road, for the Trafford Power and Light Supply, Ltd.; store, Brunswick-street, for Mr. Thomas Shawcross; alterations to entrance, Lyceum Picture House, City-road, for Mr. H. D. Moorhouse; additions to chemical works, Mosley-road, for Messrs. H. N. Morris & Co.

WALSALL.—The Gas Committee proposes to lay a new main in Blue-lane at an estimated cost of £3,500.

WOLVERHAMPTON.—Plans passed by T.C.: Brotherton Tubes and Conduits, Ltd., steel chimney, ovens and w.c.'s, Horseley-fields; Clyno Engineering Co., office, &c., and rebuilding wall of foundry, Southampton-street, and sanitary conveniences, Montrose-street; Villiers Engineering Co., extensions to View Room, Villiers-street; Hooran Engineering Co., Ltd., shed, Bilston-road; the Y.W.C.A. Hostel Committee, new w.c.'s and alterations, Stafford-street; F. Myatt & Co., Ltd., workshop, Raglan-street; Jas. Taylor, covered yard, Hordern-road; Jones Bros., & Co., lavatories, Ablow-street; B. Purshouse, 17, Dunstall-road; A. Beech, office, Owen-road T. H. Hill & Sons, Ltd., warehouse, Nelson-street; J. H. Large, alterations and additions, Little Brick-kiln-street; Joseph Horton, harness room and emergency exit, Star and Garter Hotel; Bells United Asbestos Co., Ltd., lavatory, Willenhall-road; Thos. Taylor, shed Green-lane; J. S. Corbett, covered yard, 155, Waterloo-road; Henry Freeth, shed, 45, Tettenhall-road; John Rogers, shed, Eagle-street; Phoenix Tileries, Ltd., shed, Phoenix-street; Wolverhampton Bill Posting Co., Ltd., hoarding, Wadham's-hill and North street; E. Blakemore & Sons, Ltd., shed, Salop-street; W. J. Campion, covered cartway, Stafford-street; Staffordshire Engineering and Boiler Covering Co., shedding, Chillington-fields, Willenhall-road; Wyman & Sons, Ltd., hoarding, Wednesfield-road.

Competitions, Contracts, &c.

FURNITURE, MATERIALS, etc.

MARCH 20.—**Farnham.**—MATERIALS.—Supply to the Guardians of building materials, &c. Forms from the Master of the Workhouse.

Auction Sales.

✱MARCH 19.—**London.**—Messrs. J. T. Skelding & Co. will sell on the premises, 154, Great Titchfield-street, W., the whole of the stock of timber, woodworking machinery, and builders' and contractors' stock and plant; also the beneficial interest in the lease of the works and premises. Auction Offices, 48, Gresham-street, Guildhall, E.C.2.

✱APRIL 5.—**Gt. Shelford.**—Messrs. A. T. Grain & Sons will sell on the premises, by order of Mr. E. C. Melton, builders' stock, comprising Otto oil engine, four portable buildings, &c. Also household furniture. Catalogues may be had from 66, St. Andrew's-street, Cambridge, and Cattle Marts, Cambridge and Ely.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur :—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Aberdare	11	11	11	11	11	10½	10	8	8	8
Accrington	11½	11½	11	9½	9	10	9½	7	7	7
Altrincham	1/2	1/2	1/3	1/2	1/-	1/1	1/-	10	10	10
Ashton-under-Lyne	1/1	1/2	1/1½	1/1	1/1	1/2	1/-	9½	10	10
Barnsley	1/0½	1/1	1/1½	1/1½	1/-	1/-	9½	9½	9½	9½
Barrow-in-Furness	1/1½	1/1	1/1	1/0½	1/0½	1/0½	1/0½	10	10	10
Barry	1/-	1/-	1/-	1/-	—	1/-	11	9	9	9
Bath	11½	11½	11½	11	11	11½	10½	9	9	9
Bedford	11	11	11	11	11	11	9	9	9	9½
Birkenhead	1/2	1/2	1/2	1/1	1/1	1/3	1/2	10½	10½	10½
Birmingham	1/1½§	1/1½§	1/1½§	1/1½§	1/1½§	1/1½§	1/0§	10½§	10½§	10½§
Bishop Auckland	11	11	11	11	1/1½	11	10	8	8	8½
Blackburn	11½	1/0½	1/1½	11	11½	1/1½	1/-	8½	9	9
Blackpool	1/-	11	1/2	9½	8½	9½	10½	6	6	6
Bolton	1/1	1/2	1/1	11½	1/0½	1/2	1/0	7½	7½	10
Bournemouth	11	11	11	11	11	11	10½	8½	8½	8½
Bradford	1/2½	1/2½	1/2	1/1½	1/1½	1/3	1/1	1/-	1/-	1/-
Bridgwater	8½	8½	8½	8½	8½	8	7½	6	6	6
Brighton	1/-	1/-	1/-	1/-	1/-	1/-	10½	9½	9½	9½
Bristol	1/2½	1/2½	1/2½	1/2½	—	1/2½	1/1½	11½	11½	11½
Burnley	11½	11½	1/0½	10½	9	10½	1/-	7	7½	7½
Burton-on-Trent	11	11	11	11	11	11	10½	8½	8½	8½
Bury	1/2	1/2	1/2	1/1	1/1	1/2	11½	10	10½	10½
Cambridge	11	10½	10½	10½	10½	11	9	7½	7½	7½
Cardiff	1/1½	1/1½	1/1½	1/1½	1/1½	1/2½	1/0½	10½	10½	10½
Chatham	10	10	10	10	10	10	8½	7	7	7
Chelmsford	8	7½	8½	9	—	7½	6½	5	5	6½
Cheltenham	9½	9½	9½	9½	—	9½	9½	6½*	6½*	6½
Chester	11½	1/-	1/-	11	11	11	10	7½	8½	8½
Chesterfield	1/-	1/-	11	11	10	11	10½	8–8½	8–8½	8–8½
Colchester	9	9½	9½	10	9	10	7	6½	6½	6½
Coventry	1/2	1/2	1/2	1/2	1/2	1/2	1/1	11½	11½	1/-
Crewe	9	9½	10	10½	10	9½	10	7	7	7½
Darlington	1/1	1/1	1/1	1/1	1/1½	1/-	1/-	10	10	10
Derby	1/-	1/-	1/-	1/-	1/-	11½	11½	9	9	9½
Doncaster	10½	1/-	1/-	10½	10½	10	9½	9½	9½	9½
Dudley	9½	1/-	1/-	10	10	9½	8½	9	9	9½
Durham	10½	10½	10½	10½	10½	9½	9	7½	7½	7½
East Glam. and Mon. Valleys	10	10	10	10	—	—	9	7	7	7
Exeter	10	10	10	10	10	10	9	8	8	8
Folkestone	8½	9	9	9½	8½	9	8	7	7	7
Gloucester	10½	11	11	10½	10½	11	10	8½	8½	8½
Grantham	9½	10	9½	9½	10	8½	8	8	7½	8
Grays	—	1/-	1/-	—	—	1/-	10½	—	10	10
Grimsby	11½	1/-	1/-	1/-	1/-	1/-	10	10	10	10
Great Yarmouth	10	10	10	10	10	10	8½	7	7	7
Halifax	1/1½	1/1½	1/1½	1/1½	1/1½	1/2	11	10½	10½	10½
Harrogate	10½	9½	11	9	8	1/-	9½	7½	7½	7½
Hartlepools	1/0½	1/1	1/1	1/1	1/1½	10½	1/-	10	10	10½
Hastings	10	10	10	10	10	10	8½	7	7	7
Hereford	10	10	10	10	10	10	9	7½	7½	7½
Huddersfield	1/1½	1/1½	1/-	1/-	1/-	1/-	11	11½	11½	11½
Hull	1/1	1/1	1/1	1/1	1/1	1/-	11½	11	11	11
Ipswich	1/-	1/-	1/-	1/0½	1/-	1/0½	10½	9½	9½	9½
Lancaster	1/-	1/-	1/-	1/-	1/-	1/-	1/-	9	9	9
Leamington Spa	10½	10½	10½	10½	10½	10½	9½	7½	7½	7½
Leeds	1/2½	1/2½	1/2	1/2	1/2	1/3	11½	10½	10½	11
Leicester	1/1	1/1	1/1	1/1	1/1½	1/1	11½	9½	9½	9½
Lincoln	10½	1/-	10½	10½	10½	10½	10	9½	10½	10½
Liverpool	1/2	1/2	1/2	1/2	1/1½	1/3	1/0½	10½	10½	10½
Llanelly	1/1	1/1	1/1	1/1	1/1	1/3	11½	10½	10½	11½
London	1/8½	1/3½	1/3½	1/3½	—	1/3½	1/0½	11½	11½	11½
Loughborough	10	10	10½	10	10	10	9	8½	8½	9½
Luton	10½	10½	10½	11½	10½	11	9½	8	8½	9
Maidstone	10	10	10	10	10	10	9	7	7	7
Manchester	1/3	1/3	1/3	1/3	1/2	1/4	1/3	11	11½	11½
Mansfield	11	11	10½	11	11	10½	11	8	8	8
Merthyr Tydfil	11	11	11	11	11	11	10	8½	8½	8½
Middlesbrough	1/2	1/2	1/2	1/2	1/1½	10½	1/-	11	11	11
Newcastle-on-Tyne	1/2	1/2	1/2	1/2	1/1½	1/1	1/1	11	11	11
Newport, Mon.	11½	11½	11½	11½	11½	1/2	10½	8½	8½	8½
Northampton	1/-	1/-	1/-	1/-	1/-	1/-	11	9½	9½	9½
Norwich	10½	10½	10½	10½	10½	10½	9½	8	8	8
Nottingham	1/2½	1/2½	1/2½	1/2½	1/2½	1/3	1/1½	1/0½	1/0½	1/0½
Oldham	1/1	1/-	1/2	1/-	11	1/2	1/-	10½	10½	11
Oxford	11	10½	10½	10½	10½	10½	9½	8	8	8
Plymouth	1/2*	1/2*	1/2*	1/2*	1/2*	1/2*	8½*	8½	8½	8½
Pontypridd	11	11	11	11	11	11	10	8	8	8
Portsmouth	1/-	1/-	1/-	1/-	1/-	1/-	10	9½	9½	9½
Preston	1/-	1/0½	11½	1/-	1/-	1/-	11½	8½	9	8½
Reading	10½	10½	10½	11	10½	10½	9	7½*	7½*	7½*
Rochdale	1/1	1/-	1/2	1/1	11½	1/2	1/-	9½	9½	10
Rochester	10	10	10	10	10	10	8½	7	7	7
Rugby	1/-	1/-	1/-	1/0½	1/1	1/-	11	9	9	10
St. Albans	10	10	10	10	10	10	9	8	8	8½
St. Helen's	1/2	1/2	1/2	1/2	1/2	1/2	1/1	8	8	8
Scarborough	9½	9½	9	9½	9½	9½	8½	9	9	9
Sheffield	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/1½	11½	11½	11½
Shrewsbury	8½	11½	11½	9½	—	8½	7	8½	8½	8½
Southampton	1/0½	1/0½	1/0½	1/0½	1/0½	1/0½	11½	9½	9½	9½
Southend-on-Sea	10	10	10	10	Piecework	10	9	8	8	8
Southport	11½	11	11½	11	11	1/1	1/1	7	7½	7½
South Shields	1/2	1/2	1/2	1/2	1/1½	1/1*	1/1	11	11	11
Stockport	1/2	1/1½	1/1½	1/-	1/1½	1/2	11½	10	10	10
Stockton-on-Tees	1/2	1/2	1/2	1/2	1/1½	10½	1/-	11	11	11
Stoke-on-Trent	11½	11½	11½	11½	—	10½	10½	8½	8½	8½
Stroud	9½	9½	9½	9½	9½	9½	9	7½	7½	7½
Sunderland	1/2½	1/3	1/2½	1/2½	1/1½	1/1½	1/1	11½	11½	11½
Swansea	1/1	1/1	1/1	1/1	1/1	1/2	1/0½	10	10	10
Taunton	10	10	10	10	10	10	9	7½	7½	7½
Torquay	10	10	10	10	10	10	10	8	8	8
Wakefield	10	1/-	11½	1/-	1/-	1/1	10	9½	9½	9½
Walsall	1/1½	1/1½	1/1½	1/1½	1/1½	1/1½	1/-	11½	11½	11½
Warrington	11½	1/0½	1/0½	1/1	1/1	1/0½	11½	8½	9	9½
West Bromwich	11	11	10½	10½	—	10	9	8	8	8
Wigan	1/0½	1/1	1/0½	1/-	11½	1/0½	11½	10	10	10½
Windsor	1/-	1/-	1/-	1/-	1/-	1/-	10½	9	9	9
Wolverhampton	1/-§	1/-§	1/-§	1/-§	1/-§	1/-§	10½§	9§	9§	10½
Worcester	9½	1/-	1/-	1/-	1/-	1/-	10	10½	10½	9½
York	1/-	1/-	1/-	1/-	1/-	10½	9½	9½	9½	7½

The Masons' rate given is for bankers; fixers usually ½d. per hour extra.

* War bonus of 2s. per week granted. † War bonus of 3s. per week granted. ‡ War bonus of 3s. 6d. per week granted.
‖ War bonus of 6s. per week granted. § 1½d. per hour extra for men engaged on munition work.

PRICES CURRENT OF MATERIALS.

(Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry. Since our last issue several prices have been revised—Ed.)

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1,000 Alongside, in River Thames.	£ s. d.
Best Stocks	2 10 0
Picked Stocks for Facings	3 5 0

Per 1000, Delivered at Railway Depot, London.

	£ s. d.		£ s. d.
Flettons	2 3 0	Best Blue Pressed Staffordshire	6 5 0
Best Fareham Red	4 0 0	Do. Bullnose	6 10 0
Best Red Pressed Ruabon Facing	6 0 0	Best Stourbridge Fire bricks	9 5 0
GLAZED BRICKS—		D'ble Str'tch'rs	20 7 6
Best White, Ivory, and Salt Glazed Stretchers	14 17 6	D'ble Headers	17 7 6
Headers	14 7 6	One Side and two Ends	21 7 6
Quoins, Bullnose and 4½in. Flats	18 7 6	Two Sides and one End	22 17 6
		Splays and Squints	19 17 6

Glazed bricks priced at so much each, 25 per cent. advance on list.

Second Quality, £1 per 1,000 less than best.

	s. d.		
Thames Ballast	9 9	per yard,	delivered
Pit Sand	12 6		
Thames Sand	13 6	" "	2 miles
Best Washed Sand	14 0	" "	radius
¾ in. Shingle for Ferro-Concrete	12 0	" "	Paddington.

Per ton, delivered.

	£ s. d.	£ s. d.
Best Portland Cement	2 15 0 ..	2 18 0

Do. £2 11s. 0d. alongside in 80-ton lots.
Ferrocrete 2s. 6d. per ton extra on above.
Best Ground Blue Lias Lime 1 13 6 at rly. depot.
NOTE.—The cement or lime is exclusive of the ordinary charge for sacks. The sacks are charged at 2s. 3d. each and credited at 2s. each if returned in good condition within three months.
Grey Stone Lime ..... 47s. 0d. per ton delivered.
Stourbridge Fireclay in s'cks 37s. 6d. per ton at rly. dpt.

STONE.

BATH STONE—delivered in railway trucks at	s. d.
Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	1 7
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	1 8½
Do. do. delivered on road waggons at Nine Elms Depot	1 9½
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L. & S.W.R., South Lambeth Station, G.W.R., and Mileage Station G.W.R., per ft. cube	2 10½
Do. do. delivered on road waggons at above stations, per ft. cube	2 11½

White basebed, 2d. per ft. cube extra.
NOTE.—½d. ft. cube extra for every foot over 20 ft. *average.*

RANDOM BLOCKS—Per Ft. Cube, delivered at Rly. Dpot.

	s. d.		s. d.
Ancaster in blocks	2 0	Closeburn Red	
Beer in blocks	1 7½	Freestone	2 2
Grinshill in blocks	2 4	Red & White Mansfield random block	2 9
Darley Dale in blocks	2 5	Yellow Magnesian Limestone do. do	3 3

YORK STONE—*Robin Hood Quality.*
Delivered at any Goods Station London.

	s. d.
Scappled random blocks ..... Per Ft. Cube	3 11
6 in. sawn two sides landings to sizes (under 30 ft. super.) ..... Per Ft. Super	3 0
6 in. rubbed two sides, ditto ..... "	3 4
3 in. sawn two sides slabs (random sizes) "	1 3½
2 in. to 2½ in. sawn one side slabs (random sizes) ..... "	0 10
1½ in. to 2 in. ditto, ditto ..... "	0 8½
HARD YORK—	
Delivered at any Goods Station London.	
Scappled random blocks ..... Per Ft. Cube	3 6
6 in. sawn two sides landing to sizes (under 40ft. super.) ..... Per Ft. Super	2 8
6 in. rubbed two sides ditto ..... "	2 4
3 in. sawn two sides slabs (random sizes) "	1 3
2 in. self-faced random flags ..... "	0 5½

TILES.

	Per 1,000 f.o.r. London. £ s. d.
Best machine-made tiles from Broseley or Staffordshire district	3 15 0
Ditto hand-made ditto	3 17 6
Ornamental ditto	4 0 0
Hip and valley tiles (per dozen)	0 9 0

SLATES.

		Per 1,000 of 1,200 f.o.r. London. £ s. d.
Best Blue Bangor Slates,	20 by 10	16 10 0
" "	16 by 8	8 10 0
First quality " "	20 by 10	16 0 0
" "	16 by 8	8 2 6
Best Blue Portmadoc	20 by 10	16 10 0
" "	16 by 8	8 10 0
First quality " "	20 by 10	15 5 0
" "	16 by 8	7 12 6

WOOD.

BEST BUILDING REDWOOD. Imported sizes.
Deals: 4 in. by 12 in., 4 in. by 11 in., 3 in. by 11 in., 4 in. by 9 in., and 2 in. by 11 in. ..... 6 in. by 9 in., 2½ in. by 9 in., and 2 in. by 9 in. .....

Softwood stocks controlled by the Director of Materials, consequently prices must be withdrawn

WOOD (*Continued*).

BEST BUILDING REDWOOD.
Battens: 2 in., 2½ in., and 3 in. by 8 in. .....
2 in., 2½ in., and 3 in. by 7 in. .....
2 in., 2½ in., and 3 in. by 6 in. .....
Scantlings: 2 in. by 3 in., 2 in. by 3½ in., 2 in. by 4 in., 2 in. by 4½ in. ... 3 in. by 4 in., and 3 in. by 4½ in. .....
Boards: 1 in., 1¼ in., and 1½ in. by 6 in. and 7 in. ¾ in. .....
Seconds .....
Sawn pitch pine logs (about 35 cu. ft. average .....
Do. 6 in. to 10 in. ..

Best Pitch Pine Deals ....
Under 2 in. thick .....

JOINERS' WOOD

White Sea First Quality Red: 4 in. by 11 in. ... 3 in. by 11 in., and 2 in. by 11 in. ..... 4 in. by 9 in. ..... 3 in. by 9 in., and 2½ in. by 9 in. ..... 3 in. by 11 in. boards .. 7 in. and 8 in. battens .. 7 in. and 8 in. boards ...
Archangel White Deals— Best 3 in. by 9 in. and 10 in. and 11 in. .....
Seconds, do. .....
U.S. Battens .....
Prepared Floorings and Matchings. Seconds Swedish Red and equal— 1¼ in. by 6½ in. planed and shot ..... 1¼ in. by 6½ in. planed and matched ..... 1 in. by 6½ in. planed and shot ..... 1 in. by 6½ in. planed and matched ..... ¾ in. by 6½ in. planed, matched, and beaded, or V jointed ..... 1 in. by 6½ in. do. .....
Columbian or Oregon Pine, best quality .....
Yellow Pine—First regular sizes .....
Oddments .....
Seconds, regular sizes ..
Oddments .....
Kauri Pine—Planks per ft. cube.....

Softwood stocks controlled by the Director of Materials, consequently prices must be withdrawn.

Dry Wainscot Oak, per ft. super, as inch	0	2	0	..	0	2	6
¼ in. do. do.	0	1	6	..	0	2	0
Dry Mahogany—Honduras, Tabasco, per ft. super, as inch	0	2	6	..	0	3	0
Cuba. Mahogany	0	2	6	..	0	3	6
Dry Walnut, American, per ft. super, as inch	0	2	0	..	0	3	0
French, "Italian," Walnut	0	3	0	..	0	5	0
Teak, per load (Rangoon or Moulmein)	60	0	0	}	85	0	0
Do. do. (Java)							
American Whitewood planks, per ft. cube	1	4	0	..	1	10	0
Glue, per cwt.	6	0	0	..	6	15	0

METALS.

JOISTS, GIRDERS, &c.

Rolled Steel Joists, ordinary sections, basis price .....
Plain Compound Girders, ordinary sections .....
Plain Compound Stanchions
Angles, Tees, and Channels, ordinary sections .....
Flitch Plates .....
Cast Iron Columns and Stanchions, plain ordinary patterns .....

Prices controlled by the Ministry of Munitions.

WROUGHT-IRON TUBES AND FITTINGS—
(Discount off List for lot of not less than £4 net value delivered direct from works. 5 per cent. less carriage forward if sent from London stocks.)

	Sizes up to and including 2 in. Tubes.	Fittings.	Sizes 2½ in. to 6 in. Tubes.	Fittings.
Gas	36½	40	41½	42½
Water	31½	37½	36½	40
Steam	26½	35	31½	37½
Galvanised Gas ..	13½	32½	17½	35
" Water	5	30	8½	32½
" Steam	1½ on	27	2½	30

L.C.C. SOIL PIPES— London Prices ex works.

	Pipes coated. s. d.	Bends, stock angles. s. d.	Branches, stock angles s. d.
2 in. per yd. in 6 fts.	3 2 ..	2 4½ ..	2 10½
2½ in. " ..	3 8 ..	2 7½ ..	3 7
3 in. " ..	4 6 ..	2 10½ ..	4 3½
3½ in. " ..	5 0 ..	3 7 ..	5 0
4 in. " ..	5 6 ..	4 1 ..	5 9½

RAIN-WATER PIPES, &c.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles s. d.
2 in. per yd. in 6fts. plain	2 3½ ..	1 4 ..	1 9
2½ in. " " ..	2 5 ..	1 7 ..	2 2
3 in. " " ..	2 10½ ..	1 11 ..	2 10
3½ in. " " ..	3 5½ ..	2 3 ..	3 3
4 in. " " ..	3 9½ ..	2 9 ..	4 0

L.C.C. DRAIN PIPES,—9 ft. lengths. London Prices. 4 in., 6s. 3d. .. 5 in., 7s. 9d. .. 6 in., 9s. 2d.

Per ton in London.

	£ s. d.		£ s. d.
IRON—			
Common Bars	16 10 0	to	17 0 0
Staffordshire Crown Bars — good merchant quality	16 10 0	..	17 10 0
Staffordshire "Marked Bars"	17 10 0	..	18 0 0
Mild Steel Bars	19 0 0	..	19 10 0

METALS (*Continued*).

Per ton in London.

	£ s. d.		£ s. d.
Steel Bars, Ferro-Concrete quality, £19 basis price.			
Hoop Iron, basis price	20 10 0 ..		21 0 0
" " Galvanised	33 0 0 ..		—
(* And upwards, according to size and gauge.)			
Sheet Iron Black—			
Ordinary sizes to 20 g.	22 10 0 ..		23 0 0
" " 24 g.	23 10 0 ..		24 0 0
" " 26 g.	24 10 0 ..		25 0 0
Sheet Iron, Galvanised flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	34 0 0 ..		—
Ordinary sizes to 22 g. and 24 g.	34 0 0 ..		34 10 0
Ordinary sizes to 26 g.	36 0 0 ..		36 10 0
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	35 10 0 ..		—
" " 22 g. and 24 g.	36 0 0 ..		—
Ordinary sizes to 26 g.	39 0 0 ..		—
Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 8 ft. 20 g.	33 0 0 ..		—
Ordinary sizes, 22 g. and 24 g.	33 10 0 ..		—
Ordinary sizes, 26 g.	32 10 0 ..		—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	24 10 0 ..		—
Best Soft Steel Sheets, 20 g. and 24 g.	24 15 0 ..		—
Best Soft Steel Sheets, 26 g.	26 10 0 ..		—
Cut Nails, 3 in. to 6 in.	28 0 0 ..		29 0 0

(Under 3 in., usual trade extras.)

LEAD, &c.

Delivered in London.

	£ s. d.		
LEAD—Sheet, English, 4 lb. and up	38 10 0	..	—
Pipe in coils	39 0 0	..	—
Soil Pipe	42 0 0	..	—
Compo pipe	42 0 0	..	—

NOTE—Country delivery, 20s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra. Orders for over 1 cwt. Sheet Lead or Pipe, or 28 lbs. Solder should be accompanied by a certificate or licence, which can be obtained from the Director of Materials [A.N.2 (E)], Hotel Victoria, S.W. Smaller quantities than the above can be obtained by making a written declaration to the Manufacturer or Merchant that the metal is wanted for urgent renewals or repairs, and giving the name of the job for which it is required.

COPPER—					
Strong Sheet ... per lb.	0	2	2	..	—
Thin " ... "	0	2	3	..	—
Copper nails ... "	0	2	2	..	—
Copper wire ... "	0	2	3	..	—
TIN—English Ingots "	0	3	3	..	—
SOLDER—Plumbers' "	0	1	5	..	—
Tinmen's "	0	1	10	..	—
Blowpipe "	0	2	0	..	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

	Per Ft		Per Ft.
15 oz. fourths	7d	32 oz. fourths	9d.
" thirds	7½d.	" thirds	10d.
21 " fourths	7½d	Fluted, Obscured and	
" thirds	8d.	Enamelled Sheet,	
26 " fourths	8d.	15 oz.	7½d.
" thirds	9d.	21 "	8½d.

Extra price according to size and substance for squares cut from stock, and only small quantities can be supplied without an A Certificate.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES. Per Ft.

¼ Rolled plate	4½d.
⅜ Rough rolled and rough cast plate	5½d.
½ Rough rolled and rough cast plate	5½d
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white	6½d.
Ditto, tinted	7½d.
Rolled Sheet	5d.
White Rolled Cathedral	5d.
Tinted do.	5½d.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil in pipes ... per gallon		0 5 6
" " " in barrels ... "		0 5 7
" " " in drums ... "		0 5 10
Boiled " " in barrels ... "		0 5 10
" " " in drums ... "		0 6 1

Orders for these oils must be accompanied by a certificate from the Ministry of Food (Oil and Fat Department), St. Stephen's House, Westminster, S.W.1.

Turpentine in barrels	"	0 10 6
" in drums	"	0 10 9
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		53 10 0
GENUINE WHITE LEAD PAINT— "Blackfriars," "Nine Elms," "Park," and other best brands (in 14 lb. tins) not less than 5 cwt. lots .. per ton delivered		71 10 0
Red Lead, Dry (packages extra) .. per ton		42 0 0

Orders for White and Red Lead and any Paint containing Lead must be accompanied by a certificate or licence, which can be obtained from the Director of Materials [A.N. 2 (E.)], Hotel Victoria, S.W.

Best Linseed Oil Putty	per cwt.	0 16 0
Filocol	per cwt.	0 13 6

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak	0 12 0
Pale Copal Oak	0 14 0
Superfine Pale Elastic Oak	0 16 0
Fine Extra Hard Church Oak	0 14 0
Superfine Hard-drying Oak, for seats of Churches	0 16 0
Fine Elastic Carriage	0 16 0
Superfine Pale Elastic Carriage	0 18 0
Fine Pale Maple	0 14 0
Finest Pale Durable Copal	1 0 6
Extra Pale French Oil	1 4 0
Eggshell Flatting	1 0 0
White Pale Enamel	1 6 0
Extra Pale Paper	0 14 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	1 10 0
French and Brush Polish	0 16 0

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 12 *noon on Wednesday.*

* Denotes *accepted.* † Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*

DERBY.—For setting boiler and economiser at the new power station, for the Electricity Committee of the Derby T.C. :—
‡E. Morley & Sons £492 10

GLASGOW.—For maintenance of paving in St. Mungo-, Graham-, Errol-, and Mathieson-street for 3 years, for the Corporation :—
*Wilson & Co.—At present prices, plus 35 per cent.

GLASGOW.—For painting work at Ochil Hills Sanatorium, for the Corporation :—
*James Young £424 16

LEWISHAM.—For repairs and other work necessary to adapt 41, Rushey-green for use as Central Clinic and Maternity Home, for the Borough Council :—
James Watt, Catford, on basis of prime cost of work with addition of 10 per cent. thereon.

LONDON.—For works services for 12 months for the Hackney Borough Council :—
*G. J. Anderson, 26, Lower North-street, Poplar—Execution of sewer and drain work at 95 per cent. above prices set out in Council's printed schedule of prices.
*C. H. Penfold, 159, Haggerston-road, E.—Execution of plumber's work, on the terms of his present contract.

LONDON.—For supply of materials for twelve months, for the St. Marylebone Borough Council :—
J. Ellis & Sons, Leicester—Indurated paving. 5d. per sq. yd. increase.
J. Ellis & Sons—Invert blocks. Prices unchanged.
Knowles & Co., St. Pancras—Grey lime. 6s. per ton increase.
J. Smart & Son, Poplar—Pitch, creosote, oil and tar. Pitch, 35s. 6d. per ton increase ; oil, ¼d. per gallon increase ; tar, ¼d. per gallon increase.
Constable Hart & Co.—Tar paving. Prices unchanged.
J. Gibb & Co., Ltd.—Ironwork for sewers. Prices unchanged.
Pryke & Palmer, 40-41, Upper Thames-street, E.C.—Tools and ironmongery. Prices unchanged.
Enderby Granite Co., Leicester—Enderby granite and siftings. 2 in. granite, 3d. per ton increase ; 1½ in. granite, 6d. per ton increase ; ¾ in. chippings, 1s. per ton increase ; ½ in. chippings, prices unchanged.
Hopton & Sons, Euston-square, N.W.—Timber. Oak, 1d. per foot increase ; ash, ½d. per foot increase ; elm, 1d. per foot increase.
Sabey & Co., Paddington, W.—Road materials. Flints, 2s. per cub. yd. increase ; pit shingle, 2s. per cub. yd. increase ; hoggin, 2s. per cub. yd. increase ; pit sand, 2s. per cub. yd. increase ; pit ballast, 2s. per cub. yd. increase.
A. & F. Manuelle, Throgmorton avenue, E.C.—Broken granite, and footway curb and granite pitching. Broken granite : 2 in., 2s. 6d. per ton increase ; 1½ in., 2s. 6d. per ton increase ; curb and pitching, prices unchanged.

LONDON.—For three months' supply of Portland cement and for plumbing work for three months, for the St. Marylebone Borough Council :—
*Martin, Earle & Co.—Portland cement, at 9s. 1d. per ton increase.
*T. W. Helsdon—Plumbing work.

PLYMOUTH.—For supply of two superheaters, pipes, &c., for the Corporation :—
*T. Sugden, Ltd. £483 10

SHEFFIELD.—For painting work at Maternity Centre, Norfolk-street, for the Corporation :—
*F. A. Tinker & Sons £168

SHEFFIELD.—Erection of additional storey to electricity sub-station now being built in Upwell-street, for the Corporation :—
*Wellerman Bros., Ltd. £350

SHEFFIELD.—For painting 99 houses on the High Wincobank Estate for the Corporation :—
*Simpson & Melling £343 15

SHEFFIELD.—For painting of Weedon-street and Newhall-road bridges, for the Corporation :—
*Thomas Wilkinson & Sons £352

WOLVERHAMPTON.—For construction of foundations for cooling towers at electricity works, for the Corporation :—
*T. & S. Ham £901 10

PATENTS.

APPLICATIONS PUBLISHED.*

105,927.—Emilio Luling and Mario Baroni : Construction of beams or girders.
107,575.—Ransome Concrete Machinery Company : Machine for mixing concrete and the like.
108,858.—Wilhelm Zublin : Hot water heating installations.
112,738.—Holophane, Ltd. (Holophane Glass Co.) : Prismatic glassware for illuminating purposes.
112,744.—Fletcher Russell & Co., Thomas Fletcher and Walter Banks : Water heaters.
112,749.—Waygood-Otis, Ltd. (Otis Elevator Co.) : Inclined endless conveyers or escalators.
112,757.—Emanuel Poulsen : Furniture.
112, 763.—Joseph Lilly : Apprartus for opening and closing swinging windows, ventilators, fanlights or skylights.
112,794.—Planet Foundry Company, Ltd., and James Learmonth : Barless or semi-well grate fittings for domestic fire-places.
112,819.—William Higham (Gaston Julien) : Drawing instruments and drawing boards.
112,821.—Frank Purser Fletcher : Ovens and hot cupboards heated by electricity, steam, oil, or gas.
112,839.—Rudge-Whitworth, Ltd., and John Vernon Pugh : Screw threaded metal parts whereby the screwing and locking together is facilitated.
112,840.—William James Ayles : Roof gutters.
112,870.—Peter Dick Hoe. : Wheelbarrows.
112,871.—Alexander William Stewart : System of ventilation.

* All these Applications are now in the stage in which opposition to the grant of Patents upon them may be made.

TRADE NEWS.

Messrs. A. J. Staines & Co., Ltd., builders, &c., announce that they have relinquished business at their works, 154, Great Titchfield-street, W. 1, and that their Registered Office is now 46, Bishopsgate, E.C. 2. Telephone : London Wall 7614.

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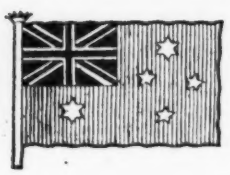
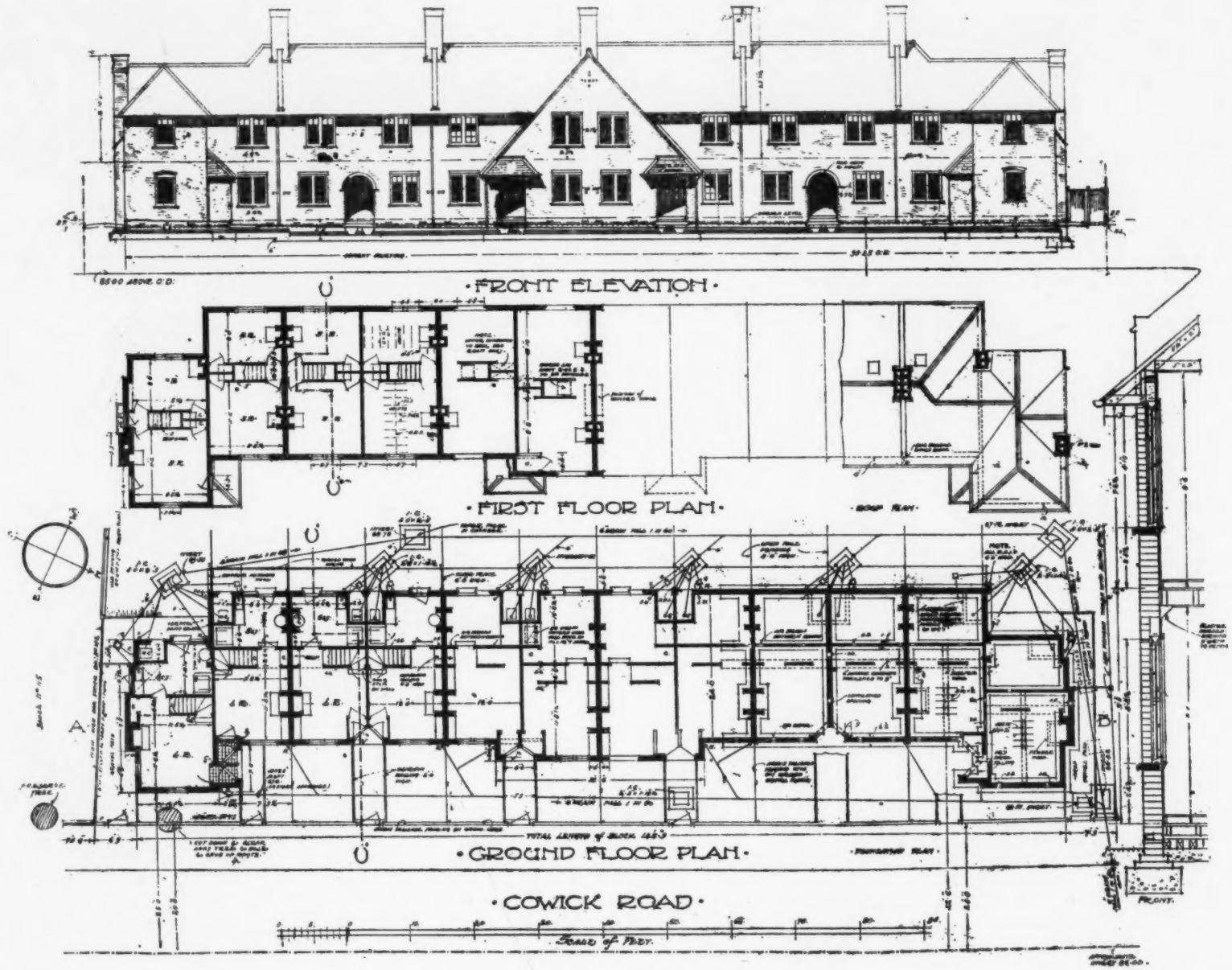


BRC Fabric



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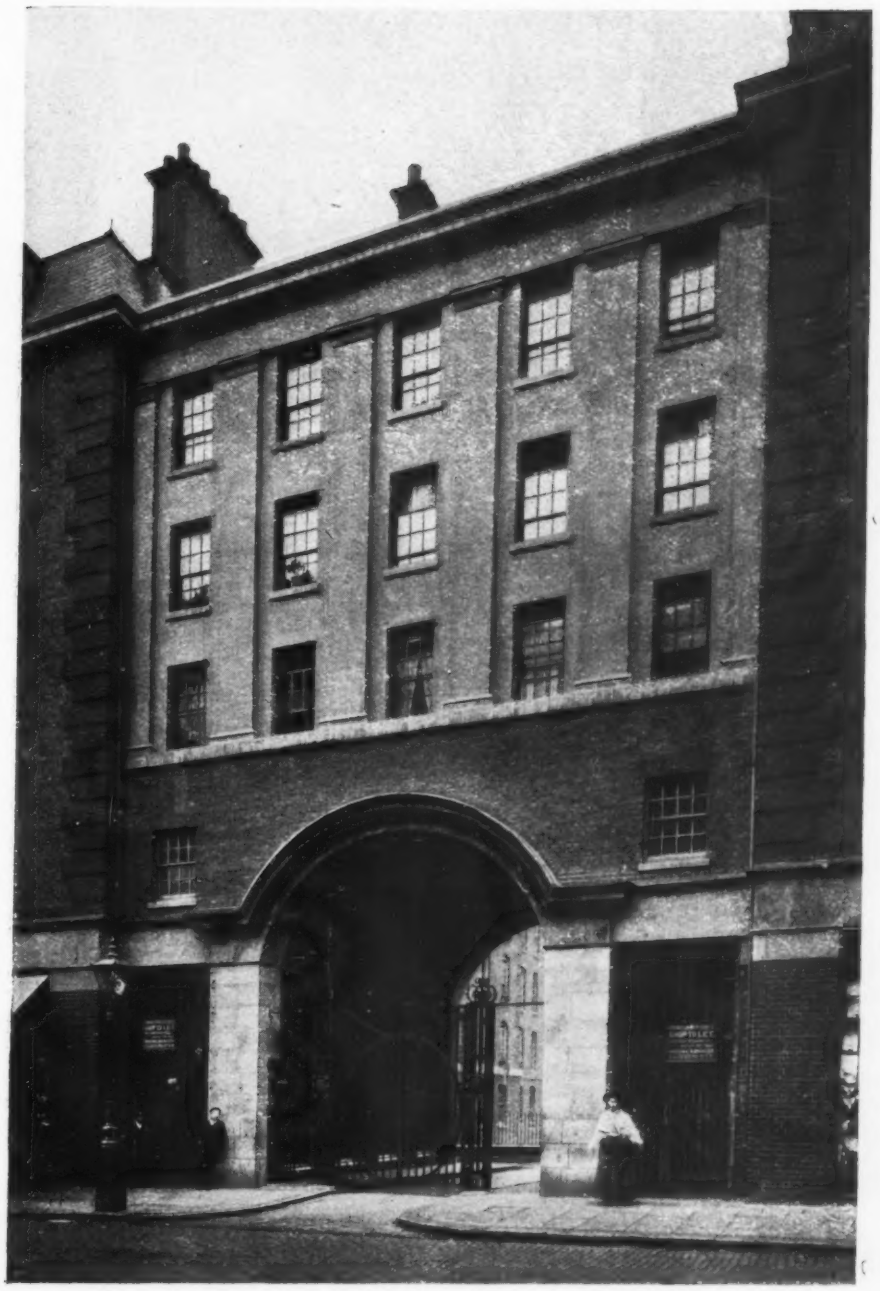

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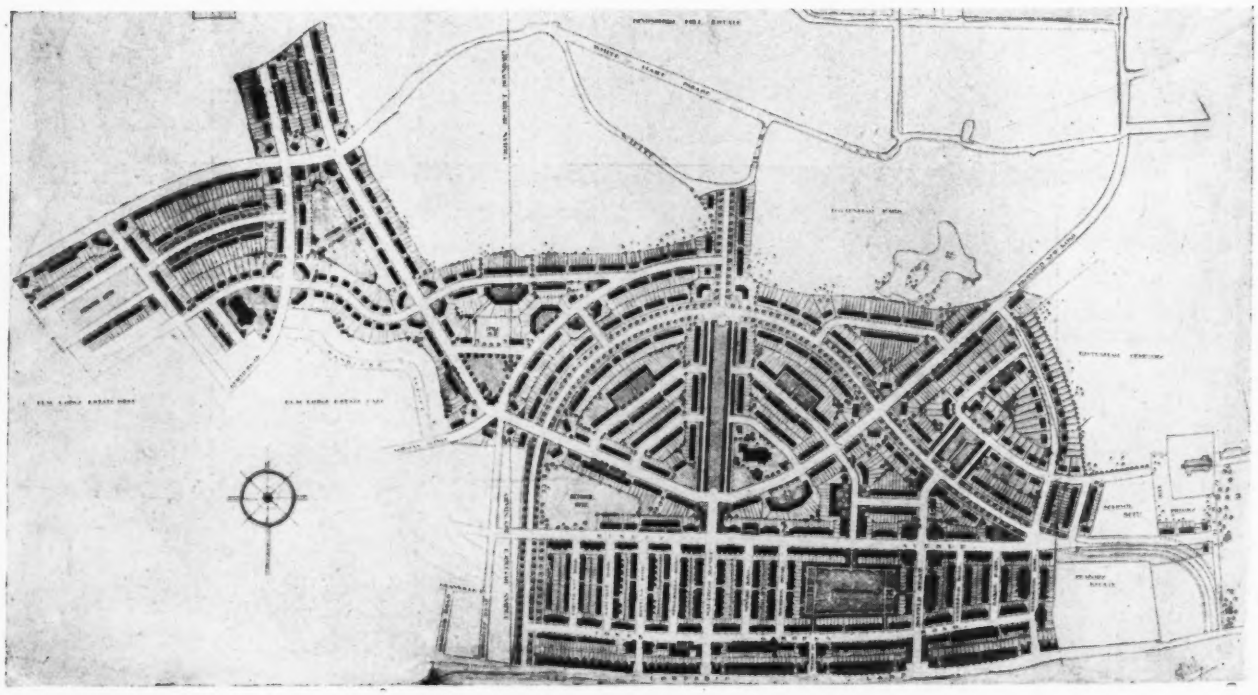

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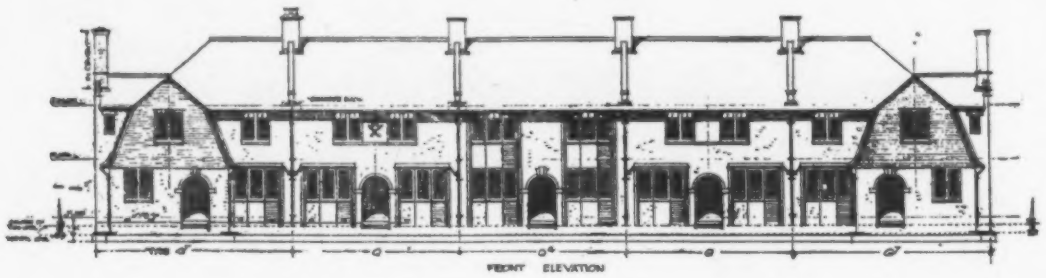

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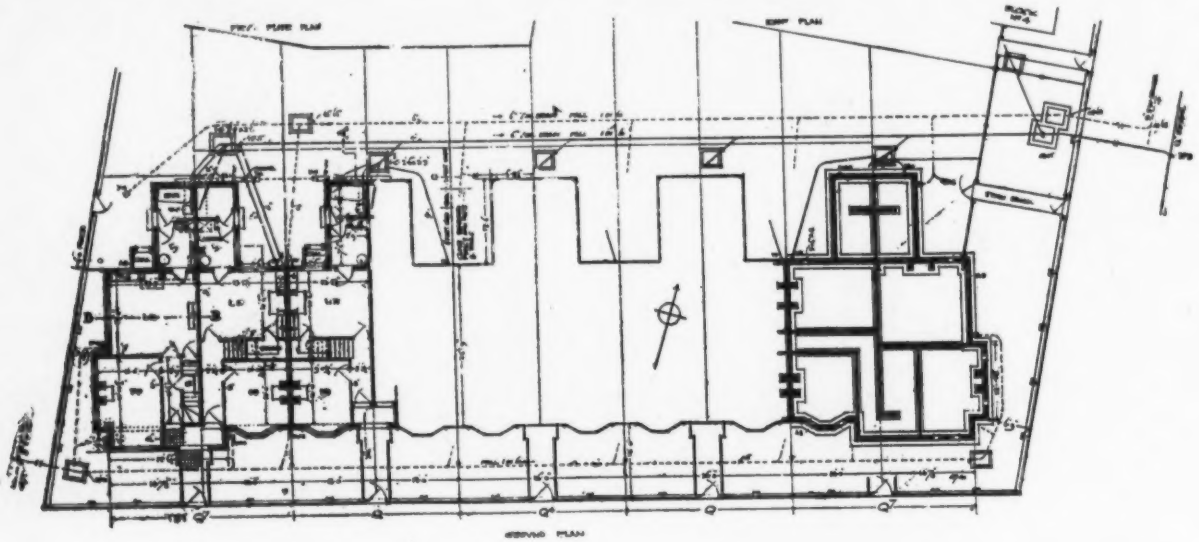

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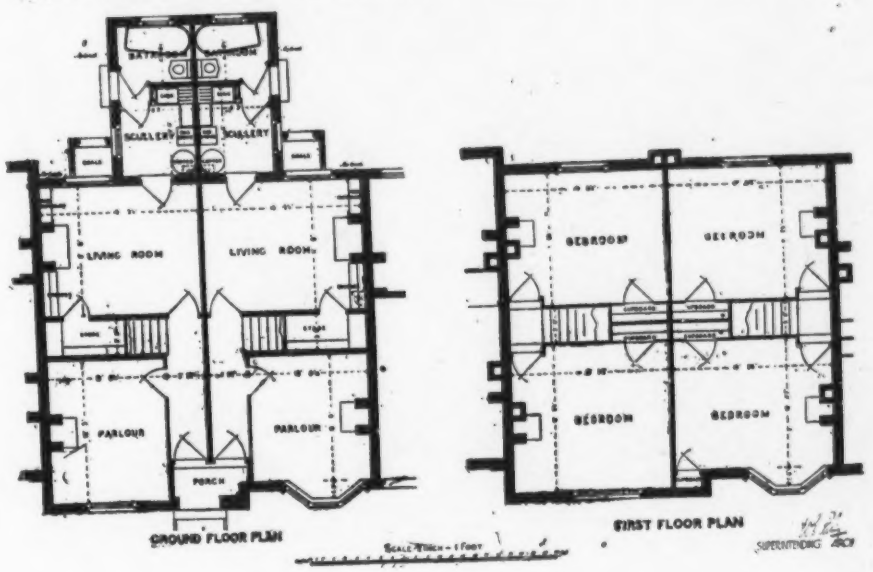

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